



Designing the Bayous

The Control of
Water in the
Atchafalaya Basin

1800-1995

Martin Reuss



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Back: Charenton Floodgate, Atchafalaya Basin, 1988

Designing the Bayous

The Control of Water in the Atchafalaya Basin 1800–1995

by
Martin Reuss

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Foreword

OF ALL THE NATURAL RESOURCES that bless the United States, none is more important than its water. The nation's rivers and streams provide vital navigation links, hydropower, fishing, recreation, and water for domestic, agricultural, and industrial use. At the same time, they occasionally overrun towns and farms, destroy property, threaten livelihoods, and take lives.

Perhaps nowhere in the country have the conflicting purposes of water development stimulated more studies, engineering responses, and public involvement than in Louisiana's Atchafalaya Basin—which includes the largest river basin swamp in North America. Since the early nineteenth century, all levels of government have been involved. The U. S. Army Corps of Engineers' part in the basin's development includes providing flood control and maintaining navigable channels. Today, the Atchafalaya Basin serves as a major floodway to convey Mississippi River water to the Gulf of Mexico.

In this history, Dr. Reuss tells the complicated, but fascinating story of how local, state, and federal agencies have attempted to reconcile conflicting visions for the basin. In so doing, he illuminates the interaction of politics, technology, and environment. Though focusing on one area of the country, this book addresses many themes associated with the development of water resources throughout the United States.



JOE N. BALLARD
Lieutenant General, USA
Commanding

About the Author

MARTIN REUSS IS A SENIOR HISTORIAN in the Office of History, Headquarters, U.S. Army Corps of Engineers. He specializes in the history of flood control, navigation, and civil engineering. Among his monographs are *Shaping Environmental Awareness: The United States Army Corps of Engineers Environmental Advisory Board, 1970–1980* and *Reshaping National Water Politics: The Emergence of the Water Resources Development Act of 1986*.

He also introduced and edited *Water Resources Administration in the United States: Policy, Practice, and Emerging Issues* and co-edited *The Flood Control Challenge: Past, Present, and Future*.

Numerous professional journals, including *The Public Historian*, *Technology and Culture*, *Environment*, *The Journal of Policy History*, *Central European History*, *Louisiana History*, and *South Atlantic Quarterly* have published articles by Dr. Reuss.

He received his Ph.D. from Duke University and has taught at Georgia Southern College, Virginia Polytechnic Institute and State University, and the University of California, Santa Barbara.

Contents

Foreword	iii
About the Author	iv
Glossary	xi
Preface	xiii
Prologue	3

Part I: Assuming Responsibility

1: Early Flood Control Efforts, Louisiana Style	17
Early Settlers and River Transportation	19
Clearing the Streams: The Beginnings of State Aid	26
The First Federal Flood Control Plan	36
The Beginning of Federal Assistance: The Swamp Land Acts ..	40
2: Interregnum: Growing Federal Involvement	49
The Humphreys–Abbot Report	49
The Civil War and the Atchafalaya Basin	52
Once More, the Levees	56
The Federal Role Increases	62
Commerce and Transportation in the Atchafalaya Basin ..	67
3: The Outlet Question	71
The Mississippi River Commission and the Outlet Question ..	73
Navigation Interests and the Outlet Question	89
Floods and Outlets	93
4: Après Le Déluge: The Jadwin Plan	103
New Remedies for Old Problems	103
The Special Board	121
The Unwinding of the Jadwin Plan	127

Part II: Defining Responsibility

5: The Politics of Engineering	137
The Critics and the Corps	139
Dredging	147
Private Property and Public Good: Levee Rights-of-Way ..	157
Private Property and Public Good: Flowage Easements ..	167

6: Louisiana and Mississippi: The Battle Over Floodways	173
The Markham Plan	176
The Overton Act	181
Real Estate Problems	188
The 1938 and 1941 Flood Control Acts	192
Morganza Floodway Construction	198
 Part III: The Burdens of Responsibility	
7: The Old River Problem	207
Nature Takes the Low Road	209
Seeking Answers	218
Preparing the Plan	230
Authorization	234
Construction	238
Post-Construction Problems	242
8: Let the Public Be Heard: Reconciling Multiple Objectives	249
The Setting	250
Coordination or Confrontation?	254
Recreation	264
Growing State Involvement	267
9: Environmental Activists and the Corps of Engineers	273
The National Wildlife Federation–Corps of Engineers Agreement	275
Institutional Arrangements and Objectives	282
Impasse and Reorientation	284
10: Defending the Turf	291
The Environmental Protection Agency's Approach	294
The Fish and Wildlife Service Makes Its Move	299
Environmental Issues, Old and New	312
11: Denouement?	323
Real Estate Problems Again	324
Political Resolution—and Irresolution	331
New Controversies and Steps Toward Implementation	347
The Uncertain Future	351
Afterword: A Sense of Place, A Sense of Balance	355

Notes	361
Bibliography	425
Illustration Credits	453
Index	457

Illustrations

The Atchafalaya Basin floodway system	2
The “Swamp Expressway”	4
West Atchafalaya Basin Protection Levee	6
Towboat <i>Betty Brent</i> moves upstream on the Atchafalaya	7
One of many oil wells in the Atchafalaya Basin	8
The Atchafalaya Basin as shown in William Darby’s 1816 map ..	18
The arpent system in the Atchafalaya Basin	20
Acadians haul boats on Bayou Lafourche	25
Transportation routes in the Atchafalaya Basin, c. 1863	27
Henry Miller Shreve	28
Henry Shreve designed <i>The Archimedes</i>	29
The Mississippi River at Old River	31
Map of Atchafalaya Basin, c. 1829	38
Charles Ellet, Jr.	43
Andrew Atkinson Humphreys	50
Henry Larcom Abbot	51
“King Cotton Captured”	53
Union positions around Brashear City	54
“Taking cotton and sugar aboard a steamer”	55
Louisiana levee districts subject to Mississippi River floods ..	61
James Buchanan Eads	63
Steamboat and rafts on the Bayou Teche	68
Junction of the Atchafalaya and Old rivers, 1874	72
The Atchafalaya, 1883	74
Eads’ plan	75
Stickney’s plan	79
The MRC’s plan	80
Map of the Old River area, early twentieth century	82
<i>The Ram</i> working in Bayou La Rompe, 1933	83
Prisoners construct a levee close to Morganza Crevasse	85
Plaquemine Lock, 1947	89
Main Street in Melville, Louisiana, 1912 flood	93
High water in the Atchafalaya Basin, mid-May 1927	104
A crevasse at Moreauville, mid-May 1927	105

Refugees in New Iberia flee high water	106
Flooding in St. Martinville, 1927	107
Overflowed areas in the 1927 flood	109
James Fieser, Herbert Hoover, and Dwight Davis	110
The Jadwin Plan authorized in the 1928 Flood Control Act	112
Edgar Jadwin	113
Thomas Herbert Jackson	122
Lytle Brown	138
Harley Bascom Ferguson	149
The Corps of Engineers' pipeline dredge <i>Wahalak</i>	150
Ferguson's Four Channels	151
The Corps of Engineers' <i>Lake Fairfax</i>	153
Land accretion in Grand and Six Mile lakes	155
Progress of levee construction along the Atchafalaya	160
Three crevasses at Cypremort, 1932	161
Henderson, Louisiana, after the Cypremort crevasses	163
John Holmes Overton	164
Senator Overton and Representative Whittington	175
Edward Murphy Markham	177
Markham's revisions to the Jadwin Plan	180
Percentage of appraised values covered by options	189
Wax Lake Outlet, 1973	195
Atchafalaya Basin Floodways flowage easements	198
Morganza and West Atchafalaya floodways	199
Morganza Floodway intake structure, 1951	200
Morganza Floodway intake structure, 1952	201
Completed Morganza Floodway intake structure	202
Distribution of the project flood	208
Flow down the Mississippi and Atchafalaya rivers	210
Max Clayton Tyler	212
Confluence of the Old, Atchafalaya, and Red rivers, 1949	216
Peter A. Feringa	217
Hans Albert Einstein	220
Lorenz George Straub	221
Old River Control Structure operation	229
Old River control plan	231
John Ray Hardin	232
Lower Atchafalaya Basin and the intracoastal waterway	237
Model of the Old River area	239
Low sill construction, 1958	240
New navigation lock and channel at Old River, 1963	241
Barge collision at the low sill structure, 1965	242

Low sill structure before the wingwall failure	243
Wingwall collapse, low sill structure during the 1973 flood	244
Location of the auxiliary control structure	246
Old River Control	247
Fresh water distribution and navigation access channels	252
Dredge excavates on the east bank of the Atchafalaya River	261
Recreational boating in the Atchafalaya Basin	265
B. E. M. Skerrett III	269
Oliver Houck	275
Frederick James Clarke	277
Atchafalaya Basin near Buffalo Cove	292
Management units for the Atchafalaya Basin	296
Thomas Allen Sands	300
Robert Schroeder and Joseph Dykes	305
Public meeting on the Atchafalaya Basin	306
St. Mary's Industrial Group poster	307
Competing visions for the Atchafalaya	311
Modified management units for the Atchafalaya Basin	314
Final concept of the management units	316
Morgan City during the 1983 high water	317
Announcement of public meetings	320
Editorial comment on the Atchafalaya Basin settlement	329
Elvin Ragnvald Heiberg III	330
Joseph Key Bratton	338
Governor Treen and President Reagan	342
Cost estimates for the Atchafalaya Basin project	343
Demonstration project, Buffalo Cove management unit	351

Glossary

ABAMG	Atchafalaya Basin Agency Management Group
ARCE	Annual Report of the Chief of Engineers
ASA/CW	Assistant Secretary of the Army for Civil Works
BERH	Board of Engineers for Rivers and Harbors
BOR	Bureau of Outdoor Recreation
BSFW	Bureau of Sport Fisheries and Wildlife
CCC	Civilian Conservation Corps
CEQ	Council on Environmental Quality
cfs	Cubic Feet per Second
DEIS	Draft Environmental Impact Statement
DOTD	Department of Transportation and Development
EIS	Environmental Impact Statement
EMSL	Environmental Monitoring Systems Laboratory
EPA	Environmental Protection Agency
FWS	Fish and Wildlife Service
GDM	General Design Memorandum
LAROLA	Land and Royalty Owners of Louisiana Association
LMVD	Lower Mississippi Valley Division
MR&T	Mississippi River and Tributaries
MRC	Mississippi River Commission
msl	Mean Sea Level
NARA	National Archives and Records Administration
NEPA	National Environmental Policy Act
NIRA	National Industrial Recovery Act
NOD	New Orleans District
NWF	National Wildlife Federation
OASA/CW	Office of the Assistant Secretary of the Army for Civil Works
OCE	Office of the Chief of Engineers
OH HQUSACE	Office of History, Headquarters, U.S. Army Corps of Engineers
REDM	Real Estate Design Memorandum
SMIG	St. Mary's Industrial Group
STAB	Save The Atchafalaya Basin
TSP	Tentatively Selected Plan
WRDA-86	Water Resources Development Act of 1986

Preface

AS A HISTORIAN for the U.S. Army Corps of Engineers, I have had an unusual opportunity to learn something of the Corps' culture, the frustrations and rewards of the engineering profession, and the peculiar challenges facing bureaucrats in the public sector. At the same time, I have often sympathized with many of the environmental concerns raised in the last twenty years. Not surprisingly then, I care about and try to understand both engineering and environmental issues. This enthusiasm does not preclude, I trust, constructing a history that illuminates the past as fairly as possible and allows the reader—not the historian—to sit in final judgment.

The historian brings to the study of the past a sense of context and the ability to portray that context systematically over time. This sense is particularly important for historians working in public agencies. Governmental offices, to be effective, must turn policy into action, often accidentally and sometimes deliberately modifying the policy along the way. Agency officials usually do not have time to reflect on the personalities, bureaucracies, public interests, and legislative bodies—to say nothing about trends, biases, and socioeconomic forces—that have gone into the policy decisions that they are charged to implement. Nor, once policy is implemented, do many bureaucrats have the time or interest to find out exactly what the impacts are. Only if controversy occurs are officials forced to analyze the context, and, without the historian's research skills and knowledge of sources, their examinations often are superficial and self-serving. Conceivably, the agency's own files may not be the most important in documenting the history; rarely are they sufficient. Historical analysis is not only useful, but necessary to adequately assess the policy process.

This history of the Atchafalaya Basin exemplifies the point, for any responsible analysis of present policy issues must include the larger historical context extending far back in time and far beyond the basin's borders. By studying the context in which policy develops, we go beyond a simple, though enlightening, examination of human manipulation of the water resources of the Atchafalaya Basin over time. Instead, we learn about the people, policies, and institutions at all levels of government and the private sector that affected plans for the basin. This examination reveals some fundamental themes about public policy

dynamics, professional and political cultures, and the evolving relationship between technology and politics. Only when we understand these themes and how they are manifested in our culture can we say, however imperfectly, we understand.



THIS HISTORY HAS TAKEN an embarrassingly long time to complete, some fifteen years. During that time, I have accumulated many debts, and I apologize in advance for unintentionally ignoring specific contributions. To all those who have assisted in this project, I can offer only an inadequate statement of appreciation.

Throughout the research and writing of this history, I have received the generous support of my supervisors within the U.S. Army Corps of Engineers: John Greenwood, Frank Schubert, and Paul Walker. For their willingness to spend increasingly sparse funds to support this project, I am deeply grateful.

Others within the Corps of Engineers whose efforts were indispensable include my colleague Martin Gordon, whose own research on lower Mississippi valley flood control resulted in a rich collection of material that I unabashedly exploited. Charles Hendricks, formerly of the Office of History and presently with the Army Center of Military History, provided important archival nuggets from his research on the history of civil works real estate policy. He periodically attempted—I trust not futilely—to prevent me from claiming too much on one hand or ignoring underlying issues on the other. In the New Orleans District of the Corps, Fred Chatry (who provided me with a memorable helicopter ride around the Atchafalaya Basin), Oscar Rowe, Jr., and Suzanne Hawes supported my early effort. Robert Campos and Marie Burge assisted in the later stages. Nancy Mayberry ably reproduced and cataloged scores of photographs. This history could not have been written without the support of the numerous librarians and records managers in the Washington, Vicksburg, and New Orleans offices of the Corps of Engineers. To them goes a special thanks.

I was particularly fortunate to receive assistance from many people outside the Corps of Engineers. Oliver Houck, formerly of the National Wildlife Federation, provided copies of much of his Atchafalaya correspondence. David Soileau, formerly of the U.S. Fish and Wildlife Service, opened the files of that service's Lafayette, Louisiana, office. Robert Misso, also of the Fish and Wildlife Service, sent his valuable file of news clippings and press releases. Ben Skerrett, a local activist

involved in many Atchafalaya Basin deliberations, and Kai Midboe, formerly Louisiana Governor David Treen's executive assistant for federal and environmental affairs, provided file material and many useful leads to other sources. Charles Fryling guided me on an informative canoe trip through part of the basin that clearly revealed, among other things, my deficiencies in paddling.

Robert Kelley, whose death deprived public history of its foremost advocate, invited me to teach in the history department of the University of California, Santa Barbara, for two semesters. While all too brief, that time allowed me further work on this book and provided a broadened understanding of water resources development. Finally, I am indebted to the archivists in various public and private institutions who greatly facilitated my research.

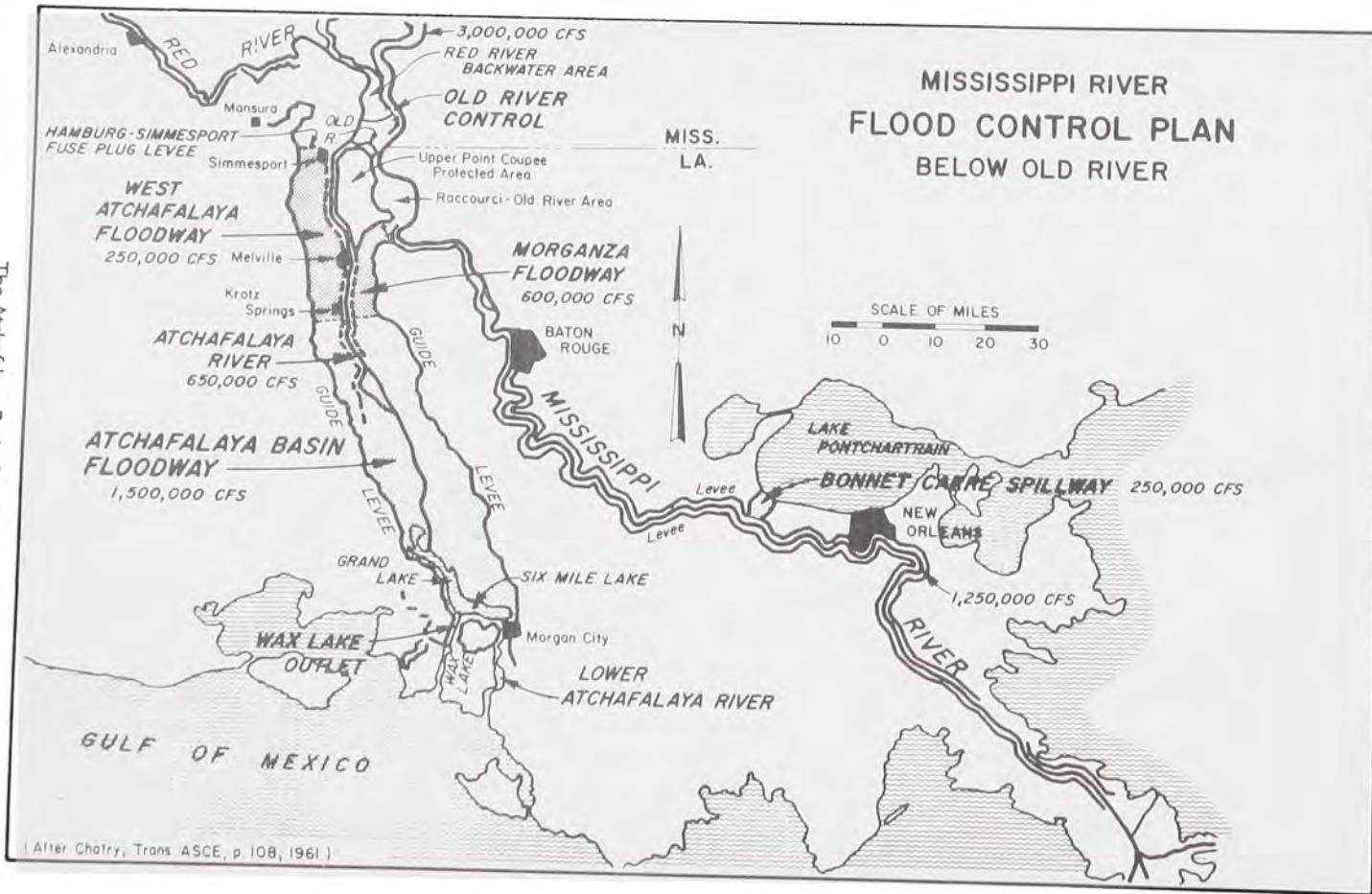
Chapter 8 of this book is a revised version of an article that originally appeared in *Environment*. Chapters 9 and 10 include revised material of an article originally published in the *Journal of Policy History*.

William Baldwin, Michael Black, Robert Campos, Albert Cowdrey, Stephen Hayes, Oliver Houck, Michal McMahon, Kai Midboe, Laura Norman, Jan Rasgus, Michael Robinson, Todd Shallat, B. E. M. Skerrett III, David Soileau, Jeffrey Stine, Newman Trowbridge, and William Willingham commented on the manuscript and helped improve it in many ways. Naturally, the responsibility for accuracy and interpretation is my own. Marilyn Hunter edited the manuscript with her usual blend of good humor and common sense. Janis Hubbard provided the index and Vinod Ajmani designed the cover.

No author's spouse could be more supportive, understanding, and patient than my wife, Jane. To her goes an expression of appreciation that falls far short of what is owed.

Designing the Bayous

The Control of Water in the Atchafalaya Basin 1800–1995



The Atchafalaya Basin floodway system.

Prologue

ABOUT 20 MILES OUT OF BATON ROUGE on I-10, past Grosse Tete and Ramah, and just past the sign "Atchafalaya Swamp Floodway," the road unexpectedly rises and the highway perches on stilts. For 17.5 miles this "Swamp Expressway" straddles swampland, the Whiskey Bay Channel, and the Atchafalaya River (uh-CHAFF-a-lie-uh; Choctaw for *long river*), and then descends close to the small community of Henderson. On either side of the road grow water oak, hackberry, sweet gum, honey locust, ash, elm, cottonwood, and some bald cypress and tupelo gum; the region contains the last cypress-tupelo swamp in the country. Through the trees or between the east- and westbound highways, pools of water glisten in the sun. Only at Lakes Pelba and Bigeaux, just before the Swamp Expressway ends, is there open space.

The expressway cost about \$6.5 million per mile and is recognized as one of the outstanding engineering achievements in the United States.¹ It crosses the Atchafalaya Basin Floodway, the largest floodway in the world and an important feature of the plan to prevent catastrophic flooding in New Orleans, Baton Rouge, and other population centers along the lower Mississippi River. West of Baton Rouge, the Swamp Expressway begins where it ascends over a ridge of earth that extends north and south. This is the manmade East Atchafalaya Basin Protection Levee. Just before the highway gets off its stilts at Henderson it jumps across another manmade levee, the West Atchafalaya Basin Protection Levee (these are also called guide levees). A few miles farther on lies Lafayette, Louisiana, the heart of Acadiana.

For over 200 years, a combination of natural forces and human intervention has shaped the Atchafalaya Basin. What and even where it is has been defined and redefined as residents, bureaucrats, experts, and outsiders have manipulated and exploited the basin's resources. The basin's water has drawn the most attention, for it defines the region's ecosystem. It has also inspired intense engineering, legal, and political disputes.

The following chapters tell the history of efforts to reconcile conflicting, changing, and often overlapping objectives in using the basin's water. Occasionally, especially in recent years, surprising

cooperation marked these efforts. Historically, however, acrimony punctuated discussions of the basin's future. Since the nineteenth century, advocates of agriculture, flood control, navigation, recreation, commercial fisheries, and extractive industries have vied for domination of the basin's management. More recently, champions of environmental protection profoundly influenced plans for the basin's future development. Caught in the midst of these competing economic and political forces, the basin's residents often seem forgotten. Meanwhile, first state and then federal engineers developed new technologies and designs to mold the natural basin to human requirements. This was not an unmitigated blessing, as this book shows.



The "Swamp Expressway," I-10 at Whiskey Bay, Atchafalaya Basin.

Because the manipulation of water in the Atchafalaya Basin extends back a very long time, involves governmental agencies at all levels, and addresses so many different and competing purposes, its history illuminates the development of water resources in the United States. Evolving and differing notions of responsibility inform much of the story of the basin. Historically, federal resource agencies defined their obligations in terms of their ability to fulfill the will of Congress and the Executive Branch, not always paying much attention to the ultimate effects of their actions. Gradually, the public demanded greater bureaucratic responsibility for the consequences of agency activities. Local communities favored a more dynamic approach that required

greater federal obligations and expenditures. Partly in consequence, the power of the national government grew, and in time federal legislation came to embrace an expanded notion of public good and governmental responsibility. While simplistically sketched here, this process generally describes the evolution of federal involvement in the Atchafalaya Basin, as indicated by the three parts into which this book is divided. It surely applies to many other water resource projects in the United States.

The Atchafalaya Basin's recent history is dominated by the story of the floodway, really a system of floodways paralleling the Atchafalaya River from Simmesport to Morgan City and composed of three parts: the West Atchafalaya Floodway, the Morganza Floodway, and the Lower Floodway. Sometimes the entire basin is defined in terms of its flood control features, but this narrow definition depends entirely on human artifact. Using this definition, the basin contains 822,000 acres. At times, too, just the Lower Floodway, some 595,000 acres containing most of the remaining swampland, is mistakenly confused with the entire basin. If the basin is expanded to include the entire Atchafalaya backwater complex lying west of the Mississippi River between Baton Rouge and the Gulf of Mexico, its size increases to nearly 2 million acres. Geologists and hydrologists describe an alluvial basin encompassing a bit over 1.1 million acres, while a Sierra Club publication suggests that the basin embraces 1.4 million acres. When the Army Corps of Engineers attempted to assess the economic impact of the basin in the early 1980s, it delineated an area containing over 9 million acres covering nearly 30 percent of Louisiana.² Generally, this book concentrates on the land within the floodway system itself, although it occasionally addresses problems to both the north and south.

An engineer might note that the Swamp Expressway cuts across the top part of the Lower Floodway. A levee on the west bank of the Atchafalaya River extends a few miles below I-10, while the levee on the east bank stops a few miles above the highway. The land between the West Bank Levee and the West Atchafalaya Basin Protection Levee is the West Atchafalaya Floodway. It has never been used. That might require dynamiting a fuse plug levee, one specially prepared of softer material to allow natural eroding in the event of a flood. The Army Corps of Engineers built the fuse plug levee between Simmesport and Hamburg about 45 miles north of I-10. Across the Atchafalaya from the West Atchafalaya Floodway is the Morganza Floodway. This floodway is connected to the Mississippi River about 30 miles north of Baton Rouge via a gated control structure. Floodwater coming down



West Atchafalaya Basin Protection Levee, November 1987.

the West Atchafalaya or Morganza floodways is directed through the Lower Floodway and then into the Gulf of Mexico.

An ecologist would probably divide the alluvial basin into four sections. To the north, above Krotz Springs, are woodlands and farmlands. The middle section (the engineer's Lower Floodway) contains North America's largest river basin swamp, a natural paradise of exotic plants and animals. The swamp attracts hunters, fishing and boating enthusiasts, nature photographers, and, in an age of increased environmental sensitivity, much controversy. Farther south, below Morgan City, is marshland. Finally, where the Atchafalaya River empties into Atchafalaya Bay, a new delta is being formed. Islands exist where a few years before there was open water. This entire region supports half of America's migratory waterfowl and yields 23 million pounds of crawfish annually. It contains one of the largest fish crops in the United States—around 766 pounds of fish per acre in the lower basin (where natural overflows increase fish production) and nearly 500 pounds of fish per acre in the upper basin as of 1980. Home to 300 species of birds, including egrets, ibises, and anhingas, the basin is thought to be a refuge for such endangered species as the peregrine falcon, Florida panther, and Bachman's warbler. In 1971, an ornithologist claimed to have seen an ivory-billed woodpecker, a species thought

by many to be extinct. Few who have traveled in this forested wetland have not been impressed with its primeval beauty.³

Engineers and ecologists see the Atchafalaya Basin through their own professional prisms. Others do as well. A barge operator sees a navigation channel when looking at the Atchafalaya River. Although the river flows south, it historically served as part of an inefficient, though important, route for travelers journeying from the Mississippi River to the prairies west of Opelousas. To cut down on travel time, first the Cajuns and then the plantation owners connected the Atchafalaya to the adjacent bayous by constructing lateral canals. Some of the small canals and ditches built around the time Louisiana entered the Union were later enlarged and served logging and petroleum interests in the twentieth century.⁴ Today, barges use the Whisky Bay Pilot Channel to save time between the Gulf Intracoastal Waterway and the Mississippi River north of Baton Rouge. With its deceptively smooth surface, the Atchafalaya belies its force, but one congressman told of going 30 miles in 14 hours against the current when the river was in flood, but returning in only 1 hour.⁵



Towboat *Betty Brent* moves upstream on the Atchafalaya River at Simmesport, Louisiana.

The Atchafalaya Basin has also provided resources for industry, mining, and commercial fishing. At first, Indians exploited the basin's natural resources. Then, over two centuries ago, the first Europeans gradually moved into the region. Acadians or "Cajuns" soon followed. After the Civil War, lumber interests brought out the cypress and pine. Since World War II, oil and gas pipelines have increasingly crisscrossed the basin, while the fur industry—chiefly muskrat, raccoon, mink, and nutria pelts—continues to flourish.⁶



One of the many oil wells in the Atchafalaya Basin.

Geologists say that the Atchafalaya River is technically not a river at all but the principal distributary of the Mississippi River; water from the Mississippi runs into the Atchafalaya rather than vice versa. Today, as a result of engineering works, the Atchafalaya also carries all the water from the Red River, which begins in Tierra Blanca Creek in eastern New Mexico. From its junction with Old River, a six-mile stretch of water connecting it to the Red and Mississippi rivers, the Atchafalaya runs southeast to Atchafalaya Bay, an inlet of the Gulf of Mexico. The Atchafalaya's average daily discharge into the Gulf is 225,000 cubic feet per second (cfs), tying it with the Yukon River for the fifth largest discharge in the United States.⁷

The Atchafalaya runs partly in its own channel and partly in a channel inherited from other streams. Like almost every other topographical feature in this part of Louisiana, its mother is the

Mississippi. By any geological reckoning, its birth is recent. Probably, the Atchafalaya did not assume its present course until around the fifteenth century as the Mississippi meandered westward. The Mississippi has woven back and forth across the Atchafalaya Basin throughout its history. From the air we can see the many alluvial ridges the Mississippi left behind. Two of these ridges, along Bayou Lafourche on the eastern side and along Bayou Teche on the western, define the basin's natural borders. Much of the original swampland resulted from the waters of the Mississippi spilling over these ridges. Subsequent overflows or breaks in the ridges dumped more water into the basin.⁸

Diverse people with different perceptions and desires staked claims to the Atchafalaya Basin. How do we reconcile these conflicting visions? At first, the relatively uncomplicated competition pitted flood control proponents against navigation interests. Later, concerns about the impact on Cajun culture, gas and oil extraction, recreation, and the environment became important. The Atchafalaya Basin is a laboratory which continues to test nature's resilience in the face of human intervention.



MANY OF THE ISSUES THAT SEEM SO MODERN, so new, in the history of the Atchafalaya Basin are, in fact, only slight revisions of questions asked generations ago. Undoubtedly, many participants in the struggles of the 1970s would have been surprised to realize the century-old genesis of some of their disputes. Others might have been astounded to know of the many early government plans at all levels to "reclaim" the Atchafalaya. To use historian Fernand Braudel's terms, recent events have both disjunctions and conjunctions with the more distant past.

The Atchafalaya story begins in the era of Jeffersonian Democracy, when many people valued state prerogatives more than national ones and took seriously the importance of localized power. Indeed, the U.S. Constitution reserved to the states all powers not explicitly granted to the federal government. In that spirit, Louisiana, developed—or controlled—its water resources in the antebellum period, with only occasional assistance from the federal government on the Mississippi River, the great "public highway" that moved commerce from the interior to New Orleans and eventually to domestic and foreign markets. During this time, the development of agricultural and commercial interests in the Atchafalaya Basin promised an auspicious

future, so long as state and individual efforts to control periodic flooding succeeded.

With the ascendancy of the Republican Party after the Civil War, the federal government more willingly used its resources to benefit commerce and protect business. Republicans—and increasingly Democrats—accepted the idea of an interdependent federalist system in which the national government cooperated with the states to provide overall economic benefits. In the case of Louisiana, like the rest of the South devastated by war, the need for federal assistance was pressing. The state petitioned Congress for aid to restore and improve its levee system. Clearly, the state did not have the resources to do the job itself, and Louisiana's strategic position at the mouth of the Mississippi reinforced the case for federal involvement. In this period, the Army Corps of Engineers became the bureaucratic arm that implemented new national policy. The Corps' role further evolved during the Progressive era after the turn of the century, when the influence of engineers and scientists in government achieved new heights.⁹

In the story of the Atchafalaya Basin, Corps of Engineers involvement is critical, so it is worthwhile recalling that the emergence of the Corps in water resources development was not without controversy.¹⁰ From the time the Corps was permanently established in 1802, many politicians, particularly from the Trans-Appalachian West, desired that it contribute to both military construction and works "of a civil nature." Nevertheless, federal assistance for "internal improvements" evolved slowly and haphazardly, the product of contentious congressional factions and an executive branch generally concerned with avoiding unconstitutional federal intrusions into state affairs.

In 1824, however, the Supreme Court ruled in *Gibbons v. Ogden* that federal authority over interstate commerce included riverine navigation. Shortly thereafter, Congress passed two important laws which, together, marked the beginning of the Corps' continuous involvement in water resources projects. The General Survey Act authorized the President to have surveys made of routes for roads and canals "of national importance, in a commercial or military point of view, or necessary for the transportation of public mail." The President assigned responsibility for the surveys to the Corps of Engineers. The second act, passed a month later, appropriated \$75,000 to improve navigation on the Ohio and Mississippi rivers by removing sandbars, snags, and other obstacles. Subsequently, the act was amended to include other rivers such as the Missouri. This work, too, was given to the Corps of Engineers.

Congress expanded the Corps' workload in 1826. New legislation authorized various river and harbor improvements and, for the first time, combined authorizations for both surveys and projects, establishing a pattern that continues to the present day. The Corps was permanently in the river improvement business. After the Civil War, as the number of projects expanded, the Corps grew increasingly dependent on civilian employees and contractors. In 1980, the Corps of Engineers employed approximately 40,000 civilians, while 500 military officers, members of the regular Army and generally West Point graduates, occupied the key management positions.

In the century following the Civil War, the Atchafalaya Basin had no constituency defending it against economic exploitation. Aside from a small Cajun population and visiting sports enthusiasts, few expressed apprehension over the basin's future. Shrimpers in the 1930s were principally concerned that fertile fishing grounds be preserved, while timber and petroleum interests drained the basin of its natural wealth. State government coffers swelled as the basin's natural resources shrank. Gradually, the Atchafalaya's natural environment was turned into a manmade one. It was a colonial mentality, not unlike that many Americans held toward Louisiana itself, and today the basin is pockmarked with both operating and abandoned oil and gas drilling sites.

The Corps of Engineers became the primary agent of human change in the Atchafalaya Basin. While the Corps' involvement in the basin began in the nineteenth century, the 1928 Flood Control Act dramatically expanded the Corps' responsibilities. The act authorized the Corps to construct a huge flood control system to protect the lower Mississippi valley, which included the Atchafalaya floodways. State and local interests protested that the Corps' plan would not pay for the sacrifice of private property. The protestors won significant modifications in the Corps' plan, gaining much of the compensation they demanded and broadening federal responsibilities in the process, although conservative politicians—and numerous Army engineers—continued to bemoan this largess as an unjustified burden on the federal treasury.

Few protested the Atchafalaya project on the grounds that levee construction and river dredging—both preceded the arrival of the Corps—would devastate the natural environment or upset deeply rooted cultural patterns. Nevertheless, the impact of the levees was significant, for the manmade bulwarks changed the Atchafalaya's natural cycle. Normally, the river would rise in the spring and feed water to distributaries winding through the swamp. During the summer

the water would gradually recede, only to rise again the following spring. However, this cycle changed once levees were built along the northern part of the Atchafalaya. Less water was available to rejuvenate the land behind the levees, and more sediment was deposited farther south where the levees stopped, turning some areas from swampland into farmland. The sediment endangered the timber and fishing industries, greatly reduced hunting and fishing opportunities, imperiled traditional navigation channels, and threatened irreparable damage to the basin's wetlands. In short, it gradually was turning an aquatic world of rare beauty into a terrestrial one.

The Corps' levees also affected the small remaining Cajun population. As one Cajun said in 1952:

When they put that big levee in, they tore up about everything the people had there. They can build little camps on their land, but it's not the same. We were happy; we didn't know what was going to happen....All we had to worry about was our health and loving our neighbors and getting along. And we'd go to dances. My brothers played the accordion and we'd go to dances, and we'd dance all night. There wasn't no drinking, there was nothing. I mean it was clean fun.¹¹

Only in the environmental era beginning around 1970 did the basin find champions who fought to preserve it. This era saw competing scientific approaches to maintaining the basin, sometimes to the amusement and consternation of the engineering community. The issues were complex and gained visibility both within the state and the nation. In the end, they compelled the state to mediate actively between the federal government and local interests.

Once the floodways were completed, the Corps faced two problems. First, engineers discovered that between 1900 and 1950, the amount of the Mississippi's flow going into the Atchafalaya had increased from 12 to 30 percent. If nothing were done, it seemed inevitable that New Orleans and Baton Rouge would eventually be on saltwater estuaries, and, conversely, Morgan City would be obliterated. Congress therefore directed the Corps to build the Old River Control Structure. Completed in 1963, and supplemented by an auxiliary structure completed in 1986, the Old River Control Structure is intended to ensure that the Atchafalaya River does not "capture" the Mississippi.¹²

Second, levee subsidence and substantial silting in the entire floodway system prevented the floodway from holding the “design project flood” (the hypothetical flood that the project was designed to control) of 1.5 million cfs within the basin.¹³ In response, the Corps decided to dredge a deep center channel and to close off distributary channels to increase the Atchafalaya’s “carrying capacity,” its ability to hold water. But the timing was inauspicious, for the Corps’ plan, reflecting a narrow engineering solution, came just when the nation was becoming increasingly sensitive to environmental issues. No plan that addressed only navigation and flood control would be acceptable. Hunting and fishing enthusiasts, environmentalists, and oil and gas proponents defended their particular interests. The story of the Corps’ response to these constituencies reveals both the potential and limitations of public-private and intergovernmental cooperation.

The story presented here is not really of one project, but of many—federal, state, and local—beginning when the first white settlers came to the Atchafalaya Basin. It is a tale of how we are coping with nature in one of the most dynamic and challenging hydraulic systems in the world. In fact, just understanding the hydraulics of the Atchafalaya Basin is a major challenge. In many respects we can see similarities between the history of the basin and that of other wetlands around the country, although the problems—both natural and manmade—of the Atchafalaya Basin appear unusually refractory and therefore especially illuminating. Central to this story are the engineers who transformed political, economic, and environmental expectations into engineering plans and projects, all the time responding to and influencing the requirements of a democratic, pluralistic society. This history finally is of governmental agencies at all levels attempting to establish new relationships with one another and with nature itself to preserve a land that is one of the natural wonders of the United States.

Part I

Assuming Responsibility

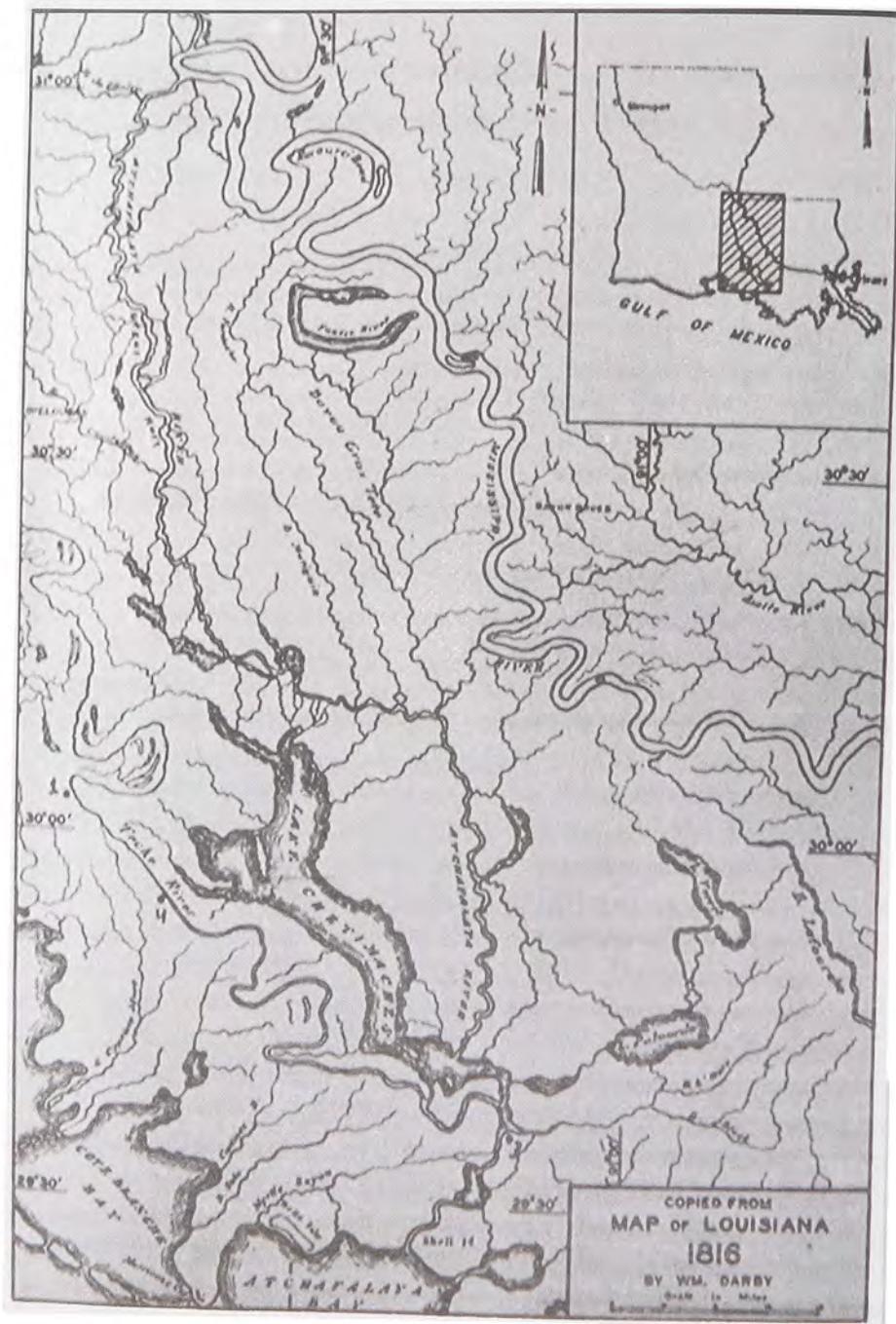


Chapter I

Early Flood Control Efforts, Louisiana Style

THE ATCHAFAHALAYA BASIN HAS ALWAYS BEEN a source of controversy. Nothing about it—not even its name—has led to easy agreement. Thomas Hutchins, the “Geographer to the United States” after the Revolutionary War, called the river the “Chafalaya” and thought the land through which it flowed “one of the most fertile countries in the world.”¹ In contrast, Henry Marie Brackenridge, a keen-eyed lawyer and amateur archaeologist who journeyed around the eastern fringe of the Atchafalaya Basin early in the nineteenth century, concluded that the region was “low and uninhabitable,” except for the lands bordering Bayou Lafourche.² Major Amos Stoddard, who took possession of Upper Louisiana for the United States after the Louisiana Purchase, believed the climate at the mouth of the “Chafalia” was “much more healthful than in any other part of the low country.”³ Moreover, he observed, in the lands to the west of the river, settlers grew cotton and sugar cane, raised cattle, and were blessed with an abundance of deer and wild turkey.⁴ Finally, the writer and surveyor William Darby described the “deep, dark and silent gloom of the inundated lands of the Atchafalaya.”⁵ He wrote, “To have an idea of the dead silence, the awful lonesomeness, and the dreary aspect of this region, it is necessary to visit the spot. Animated nature is banished; scarce a bird flits along to enliven the scenery....The imagination fleets back toward the birth of nature, when a new creation started from the deep, with all the freshness of mundane youth.”⁶

Darby’s *A Geographical Description of the State of Louisiana*, published in 1816 to popular acclaim, may have persuaded a generation of armchair travelers that the Atchafalaya was something to be avoided by all but the most adventurous. But was Darby accurate? Was the Atchafalaya Basin a primordial swampland unfit for civilized life or the fertile land of promise? Was it a forbidding swamp or the sweet-smelling garden of Evangeline?



The Atchafalaya Basin as shown in William Darby's 1816 map of Louisiana.

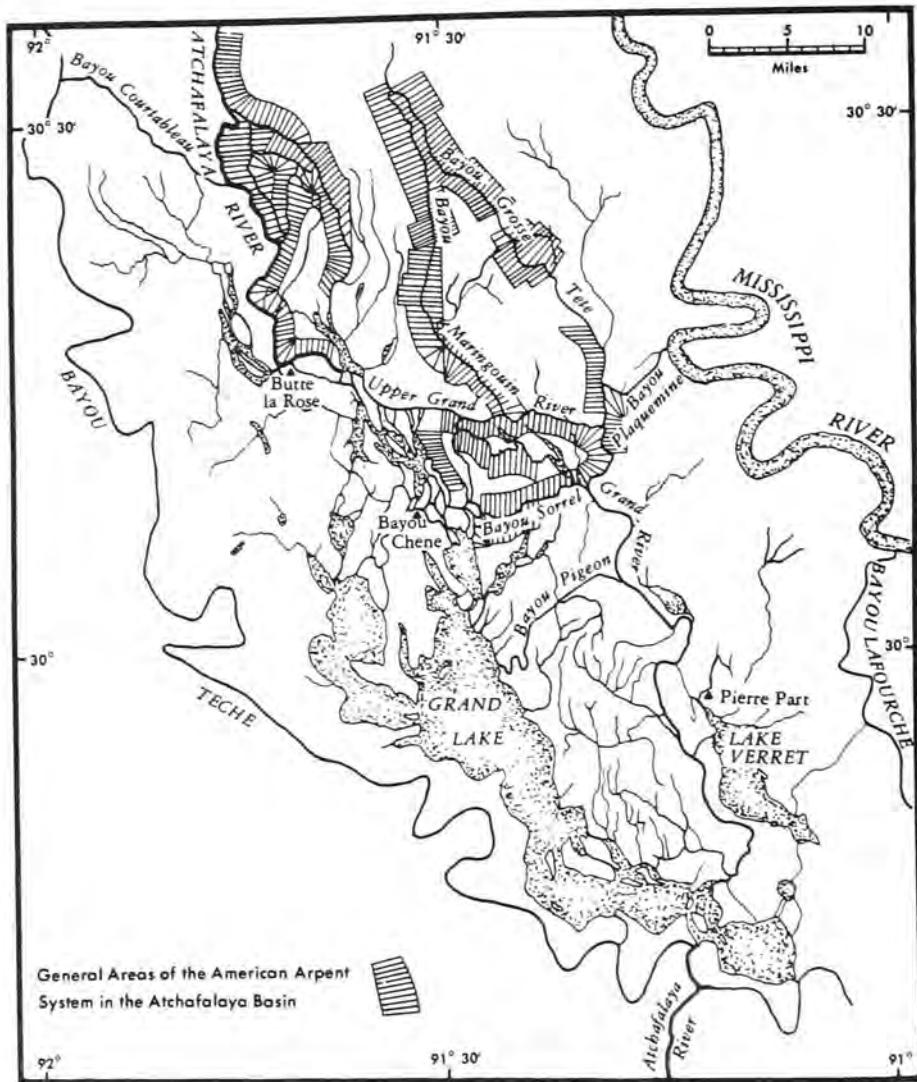
Early Settlers and River Transportation

DURING THE FIRST PERIOD of French administration in Louisiana (1698–1762), only a few enterprising Frenchmen entered the Atchafalaya swamplands. They settled in the Attakapas region, roughly the same area that today consists of Lafayette, St. Martin, and St. Mary parishes, and secured large grants of land. In the 1760s, French Acadians, expelled from Nova Scotia by the British, arrived in Louisiana. Many settled in the Attakapas area, especially along the high ground bordering Bayou Teche. In 1763, they founded Poste des Attakapas, now known as St. Martinville. Relations were good between them and the Chitimacha Indians, the only indigenous inhabitants of the region. The Acadians devoted their energy to farming the rich alluvial soil. Later, they also settled farther to the south and east of the Atchafalaya, along Bayou Lafourche and the Mississippi River—the Acadian Coasts.⁷

How many Acadians finally settled in the Atchafalaya Basin—indeed, how many came to Louisiana—remains a matter of scholarly debate. Generally, however, estimates put the number between 2,500 and 3,000 Acadians in the Louisiana territory when the United States acquired it in 1803. Of that number, perhaps a third were in the Attakapas region.⁸

It was not only Louisiana's French culture that attracted the Acadians, but also generous grants of land. Spain ruled Louisiana from 1762 to 1800, when France reacquired it, and the Spanish administrators allowed heads of families to have 350 to 475 yards of stream frontage and as much as 40 arpents, about 1.5 miles, of land extending back from the water. If the Acadians hoped that all this land would be tillable, they were greatly disappointed. Generally, the best farmland was alongside the river bank, the highest and driest part of the property. Farther back the land was wetter, less well drained, and yielded fewer crops. Landowners often left the back section of land entirely to the bottomland hardwoods and cypress-tupelo swamps that dominated the basin.

Each landowner built a levee to protect his land. French and Spanish law stipulated that the landowner agree to this before obtaining legal possession, and the small river frontage eased the burden. Of course, landowners cooperated to link up their levees. No legal requirement specified the levee height. Probably most were four to six feet high and six to nine feet across at the base, with room enough at the top for a footpath. They were built about 30 or 40 yards from the natural banks. Landowners used a stiff clay for the levees and placed



The arpent system in the Atchafalaya Basin, c. 1863.
Note the concave and convex sections at the river bends.

sod on the sides and top. Still, water constantly oozed through the levees. Levees took several years to become firm and required a variety of repairs during that time. Reconstruction was never ending.

Manmade and natural nuisances complicated the matter. Among the former were drainage ditches. Landowners cut them through the levees to convey water from the back swamps to the streams, an essential procedure. However, water could back up during floods, and often bars formed where the ditches emptied into the rivers or bayous. Common natural nuisances were crawfish. Brackenridge observed that crawfish

would dig holes that sometimes became large enough to cause a breach in the levee line.⁹

Frontage on the water provided the landowner an important advantage. It guaranteed easy access to water transportation, even if only a pirogue or bateau, flatboat or skiff. However, parceling out land this way also posed problems. As more families moved into the basin, good riparian land became scarce. Preferred farmland always bordered the convex side of a meandering stream. The boundary lines running back from the water fanned out, and the fortunate property owner found his land widening the farther back it went. However, the unfortunate owner on the concave side (which is also the side more susceptible to erosion in accordance with hydraulic laws) found his property lines quickly converging as they retreated into the swampland. Spanish authorities tried to induce people to take land on the concave side by offering more frontage along the stream. The lure enticed few. Today, real estate maps still show long slivers of land extending back from streams in the Atchafalaya Basin. Many Corps of Engineers levees cut across the slivers, separating residences from the rest of the property.

Even large properties fell victim to Acadian inheritance traditions, which called for splitting the family possessions equally among the sons. A farm would be divided longitudinally, and each son would receive a splinter of land that began at the river or bayou and extended 40 arpents into the bottomlands. Acadian families were often large, so that over several generations farms rapidly shrank in size. With nowhere to expand, population clusters became increasingly dense. One writer claimed that messages could travel by voice from house to house for some 40 miles along a stream.¹⁰

Another problem is particularly relevant to our story. Placing houses close to levees risked periodic flood damage. To withstand the seasonal fluctuations of the swamp, residents accepted a style of life that emphasized the temporary over the permanent. Rather than building sturdy houses out of brick and mortar, which invited catastrophic damages during a flood, the Acadians learned to construct cruder structures out of palmetto and cypress. As humans intervened in the hydrologic cycle of the Atchafalaya Basin, beginning in the first half of the nineteenth century, flooding became more severe; and this type of structure, increasingly supplemented by camp- or houseboats, became more common. The few permanent settlements were built on piers and the buildings connected by boardwalks to protect them from high water.¹¹

Many Acadians became subsistence farmers (*petits habitants*). In place of apples and berries native to Nova Scotia, they began growing rice, corn, sweet potatoes, and beans. They planted a little cotton and perhaps some indigo to sell commercially. They learned to weave from cotton rather than from flax and wool. Most of all, they learned to accept the natural cycle of the Atchafalaya Basin. Spring's high water and fall's low water dictated what they did and when.

Other Acadians grew sugar cane. By 1849, there were 304 Acadian sugar cane growers in and around the Atchafalaya Basin; most lived in the area between the Mississippi and Atchafalaya rivers. Some became wealthy and self-consciously imitated the mannerisms of the Creole elite. The sugar industry also provided jobs for carpenters, brick masons, and coopers.¹²

The arrival of a large number of people from the Atlantic coast states after the Louisiana Purchase forced changes in the lifestyle of many Acadians. These new settlers—the Acadians simply called them “Americans”—were wealthy enough to develop plantations generally larger than any owned by the Acadians. At first, they established their plantations on the lower Teche, between present-day Franklin and Morgan City. Later, they began to buy land from the Acadians, many of whom were eager to sell because they feared debt and could not maintain the levees. Moreover, the “Americans” considered the Acadians a bad influence on their plantation slaves and offered them lucrative prices for their real estate. Many Acadians living on small plots of land could not resist. They sold their land and moved farther into the swamps, especially those from the eastern side of the basin. Some Acadians on the western side reestablished themselves on the prairie land that extended toward Texas, where they raised beef cattle, cotton, corn, and sugar cane. The swamp dwellers (*petits habitants de marecage*) hunted, fished, and gardened enough to sustain life. After the Civil War, severe flooding in the years 1865–67, and economic recession, many more Acadians sought their livelihood in the swamps. Their income depended on crabbing, bee keeping, turtle farming, moss gathering (for furniture stuffing), fishing, trapping, hunting (especially alligators), and logging cypress trees.¹³

No one living in the basin during the late eighteenth century would have predicted that the major cash crop would become sugar cane. Earlier in the century, indigo production had been a major source of income. However, in the 1790s caterpillars severely infested the indigo, which never returned as an important cash crop for the state. Planters found that the most profitable substitute for indigo was sugar cane. Jesuits from Santo Domingo had brought sugar cane into Louisiana in

1751, and some New Orleans plantation owners had grown the cane, but it was principally made into a syrup for local use. As the demand for sugar increased in the first quarter of the nineteenth century, land speculators came into the Atchafalaya Basin, purchasing the best remaining lands and selling them at a handsome profit.¹⁴

The best sugar cane land was along Bayou Lafourche, extending for 120 miles to the Gulf of Mexico through the parishes of Ascension, Assumption, and Lafourche. The land was fertile, the climate warm, and the bayou navigable. Sugar plantations also sprang up along Bayou Teche in Attakapas country and in Terrebonne Parish, which lies between Bayous Lafourche and Teche. By the 1840s, "Americans" were also buying land for sugar cane cultivation along Bayous Pigeon and Sorrel and along Grand River. Sugar cane was also grown near Bayou Chene, right in the middle of the basin, but the crop did not equal those on the higher lands on the basin's fringes.¹⁵

The stately houses and well-cared plantation grounds impressed travelers, whether from North or South. One such visitor to Lafourche Parish in 1849, described the "magnificence of wealth" that existed: "The eye ranges abroad on scenes of cultivated districts where nearly every thing of forest growth is removed, which would prevent the highest tillage. The dwellings are commodious, and in some respects princely, and the inhabitants known for their hospitality and refinement...." He admired the many plantations, "neatly arranged, possessing all the traits which manifests the aptitude of the southern planter in the adaptation of his energies to the soil and climate."¹⁶ Those in the sugar cane business appeared to have a very good life.

As always, however, appearances deceived. While severe cold spells or excessive rain could ruin crops, a more formidable threat was floods. Louisiana's economy, and especially the Atchafalaya Basin's, depended on rivers and bayous. The waterways "determined the pattern of settlement and the course of commerce."¹⁷ And if the waterways were obstructed or in flood, the economy could be shattered.

Into the nineteenth century, *batteaux plats* or flatboats, using sails, poles, or oars, were the major means of transporting goods (via canals) on or between the bayous. Many Acadians used pirogues too. In the early nineteenth century, large keelboats journeyed along Bayou Teche. By 1815, steamboats plied the lower Mississippi, and within a few years they were also in service in the Atchafalaya Basin. Most of the steamboats in use along the bayous displayed flatter and narrower hulls than those on the Mississippi and were mechanically simpler. These changes increased the boats' maneuverability in the narrow channels and enabled easy repairs.¹⁸

In February 1818, the Louisiana General Assembly granted a monopoly to Francois Duplessis, Jr., and Martin Duralde, Jr., to operate a steamboat and ferry service between Bayous Portage and Plaquemine in the Teche Valley. The two men ordered the construction of the 103-ton *Louisianais* at New Orleans and in mid-May 1819 began operating the steamer as a cattle ferryboat, the first steamboat service in the Atchafalaya Basin. The success of this operation induced others to follow. In 1820, the incorporated Attakapas Steam Boat Company began operations out of New Iberia with the 295-ton *Teche*. The boat steamed between New Iberia and New Orleans via the Gulf of Mexico, but the route down the Teche was snag infested and operating costs were high. By 1825, the company was out of business.¹⁹

After the dissolution of the Attakapas Steam Boat Company, the only steamboat service in the Teche Valley belonged to Duplessis, who operated the *Volcano* between Bayous Cypremort and Plaquemine via the Atchafalaya Bay. Fortunately for the region's planters, this situation did not last long. Captain Robert W. Curry guided the *Louisville*, a small 48-ton steamer, from the Mississippi River to Franklin via Bayou Plaquemine, Bayou Sorrel, Grand Lake, and Bayou Teche. His voyage marked a "transportation revolution" in the Teche Valley.²⁰ Curry showed that it was possible to steam through Bayou Plaquemine at the Mississippi River's flood stage, something that many had thought impossible because of the bayou's narrow channel. From Bayou Plaquemine, steamships could then traverse upper Grand River, the lower Atchafalaya River, and Bayou Courtaleau, providing a safer and shorter route between the Attakapas country and New Orleans than one involving passage through the Gulf of Mexico. Bayou Plaquemine became a major route into the Atchafalaya Basin for smaller steamers that could take advantage of the high water of late winter and early spring. Large steamers still had to use the Gulf route.²¹

Throughout the Atchafalaya Basin, steamboats were transporting people and goods by the mid-1820s. The first steamboat on Bayou Lafourche was *The Eagle*. She made frequent stops along the bayou on the way to and from New Orleans. Though a small boat by Mississippi River standards, her arrival provided the same excuse for mixing pleasure and business. Children and adults, slaves and masters, came running when they heard the whistle blow.²²

In the great age of internal improvements in the United States, entrepreneurs tried to supplement bayou transportation with more reliable and efficient artificial canal routes. In 1830, the Barataria and



Acadians haul boats on Bayou Lafourche in this sketch by A. R. Waud.

Lafourche Canal Company began work on a lock canal to link the lower Mississippi to Bayou Lafourche via Lake Barataria. The Lafourche and Terrebonne Navigation Company began to develop a canal to connect the shallow bayous between Bayou Lafourche and Berwick Bay. While neither project was successfully completed, efforts continued to supplement and connect the generally north-south bayou routes with lateral east-west canals.²³

Travel aboard the Atchafalaya steamboats was always an adventure. Aside from drunken captains, cramped quarters, and unappetizing food, there were always the natural dangers. Ships would be stranded on shoals, ripped by unseen snags, or delayed by low water. Lighters—very small steamboats—often accompanied the large steamers to take on cargo when the larger boats approached dangerously low water. Such a necessity prolonged the voyage and added to the shipping costs.²⁴ No wonder, then, that shippers, steamboat agents, and plantation owners eagerly embraced plans to improve the rivers and bayous. Unlike the Acadians in the swamps, their livelihood depended on harmonizing the rhythm of the marketplace with that of nature.

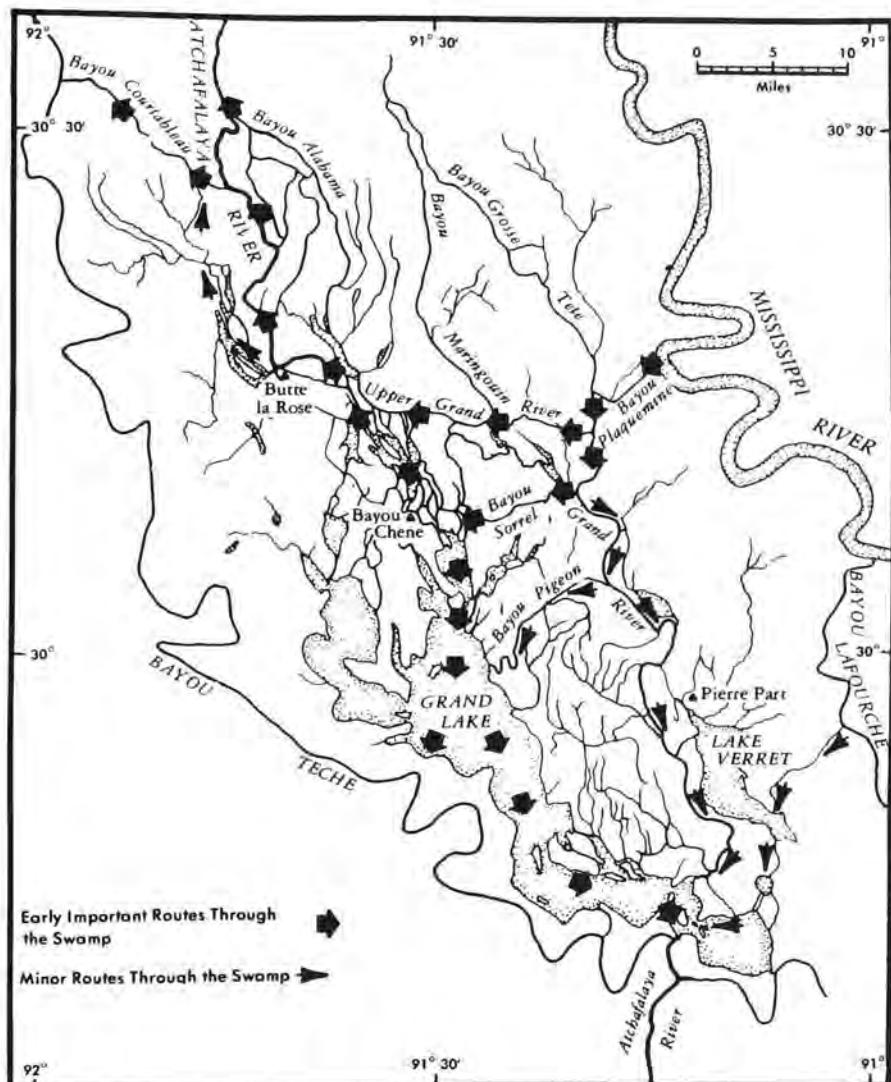
Clearing the Streams: The Beginnings of State Aid

THE ONE ROUTE INTO THE ATCHAFAHALAYA BASIN that no boat could traverse was directly down the Atchafalaya River from the Mississippi. The problem was the Atchafalaya River raft.

A raft is a mass of limbs and tree trunks and assorted debris that bunch together and obstruct the river flow. It reaches from one bank to the other and may stretch for miles down the river. The best known example was the 160-mile Red River raft that was cleared by Henry M. Shreve in the 1830s. However, planters of the Atchafalaya Basin naturally focused their attention on the Atchafalaya River raft, really a series of rafts extending 40 miles toward the Gulf from a point some 30 miles south of the river's head.²⁵ Opening up the Atchafalaya River would create a much better route between Bayou Teche and towns upstream from Baton Rouge on the Mississippi. Rather than steaming down Bayou Teche, through Grand Lake, Bayou Sorrel, and finally through Plaquemine to the Mississippi (which meant waiting for the high water season), steamboats could go directly from Grand Lake up the Atchafalaya to the Mississippi—and, with a bit of luck, do it at almost any time of the year.

The Atchafalaya raft may have started to form as early as the sixteenth century. However, early nineteenth century observers thought that severe accumulation began only after 1775. Darby pinned down the date to 1778, while James Pitot, a New Orleans businessman writing in 1802, stated that the Atchafalaya "started to accumulate wood debris in its course twenty to twenty-five years ago."²⁶ Some voyagers claimed that the raft was so thick that horses could pass over it. Timothy Flint, a minister whose travelogues are important sources on the Mississippi Valley, wrote, "A considerable vegetation of shrubs and flowering plants has been formed on the surface of this floating timber; and a man might pass directly over this vast mass of waters, without knowing when he was crossing it."²⁷ However, Darby insisted that the Atchafalaya could be crossed only with "difficulty and danger"; and Lieutenant Enoch Humphrey, a young artillery officer, reported in 1805 that the largest trees on the raft were only six inches in diameter. According to Humphrey, the raft's aggregate length at that time came to a little over ten miles. The largest section was three miles long, while the shortest was about 300 yards.²⁸

Events in the 1830s encouraged residents of the Atchafalaya Basin to believe that the river might be rid of its obstruction. In 1831, Henry Shreve dug the famous Mississippi River cutoff that was named for



Transportation routes in the Atchafalaya Basin, c. 1863.

him. A civilian who headed the Corps of Engineers Office of Western River Improvement, Shreve had already achieved mythic status by the 1830s. He had designed a steamboat that surpassed Robert Fulton's, had run the British blockade to assist Andrew Jackson's army at New Orleans in 1814, and had invented the snagboat used to clear western rivers. Largely self-educated, daring, and impatient, Shreve "was to steam navigation what Daniel Boone had been to the Kentucky frontier."²⁹

In making his cutoff, Shreve thought that he would not only eliminate river mileage, but increase the current enough to eliminate silting at the mouth of the Red River. The cutoff was made across the neck of Turnbull Bend. The Red River flowed into the bend and, two or three miles farther south, the Atchafalaya flowed out—except at low water, when it occasionally flowed into the Mississippi. After Shreve made his cutoff, the discharge from Red River flowed through the upper part of Turnbull Bend, now known as the upper Old

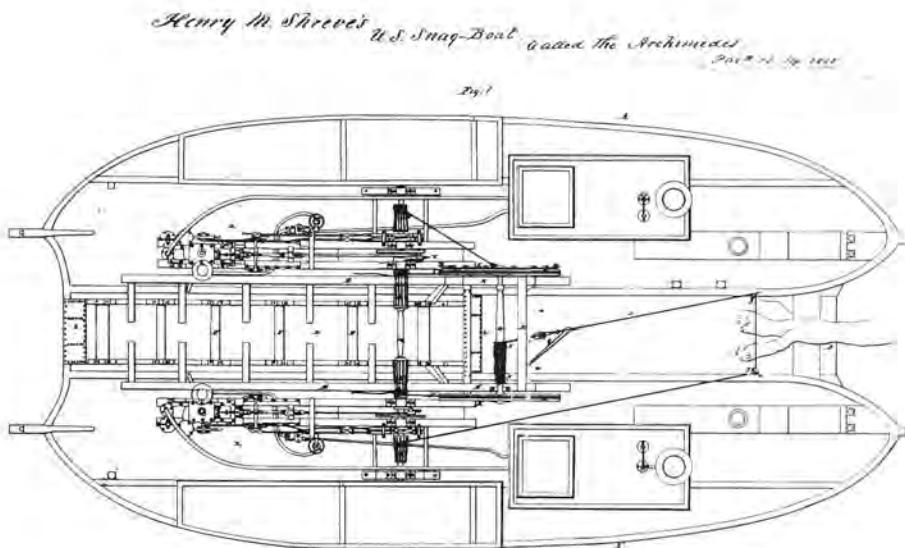
River, although the channel considerably deteriorated. The lower part of the bend, connecting the Atchafalaya to the Mississippi, deteriorated even more rapidly. Dubbed the lower Old River, this channel was effectively choked off by timber within 35 years of Shreve's "improvement"; during low water, the Atchafalaya's only source of water was the Red River.³⁰

A man of unquestionable skill, Shreve epitomized the engineer whose good intentions and engineering know-how could not compensate for inadequate investigations and insufficient scientific knowledge. During the next 150 years, these same limitations bedeviled other engineers who sought answers to complex questions relating to the Atchafalaya.

The immediate result of Shreve's cutoff was that the Atchafalaya River raft stopped growing. Unhappily for basin residents, however, so did the Atchafalaya River. It became smaller and smaller. In 1838, Brevet Brigadier General Charles Gratiot, the U.S. Army Chief Engineer, instructed Captain William H. Chase to report on "the practicability of removing the obstructions to the navigation of the Atchafalaya River, in Louisiana, and on the probable influence of said improvement on the draining of the adjacent country, and on the floods of the river lower down."³¹ Chase thought that "there can be no doubt" about the practicability of removing the raft. Such an effort would



Henry Miller Shreve (1785–1851).



Henry Shreve designed *The Archimedes* and used the snagboat to clear part of the Red River raft in 1833.

result in the Atchafalaya's drawing off a large volume of water from the Mississippi. Chase asserted that a free channel would also reduce flood levels, and he held out the promise of reclaiming approximately 500,000 acres of flood-prone land. He estimated that it would take \$350,000 to eliminate the raft and about \$87,000 for additional river improvements. Still, he thought that this investment would be returned tenfold in terms of land reclaimed.³²

Chase's optimistic report must have heartened Louisiana citizens. The captain did not seem to share Amos Stoddard's concern, expressed as early as 1812, that the Atchafalaya might actually capture the Mississippi should the raft be removed.³³ Instead, he confidently predicted that, given enough manpower and money, the Atchafalaya could be cleared once and forever. Unfortunately for Louisianians, his report came at an inopportune time. Reacting to the 1837 financial panic and increased concern over the rising cost of public works projects, Congress tightened the budget for "internal improvements." From 1838 to 1852, it refused to approve any new projects. If the people of Louisiana were going to clear the Atchafalaya, they would have to do it themselves.

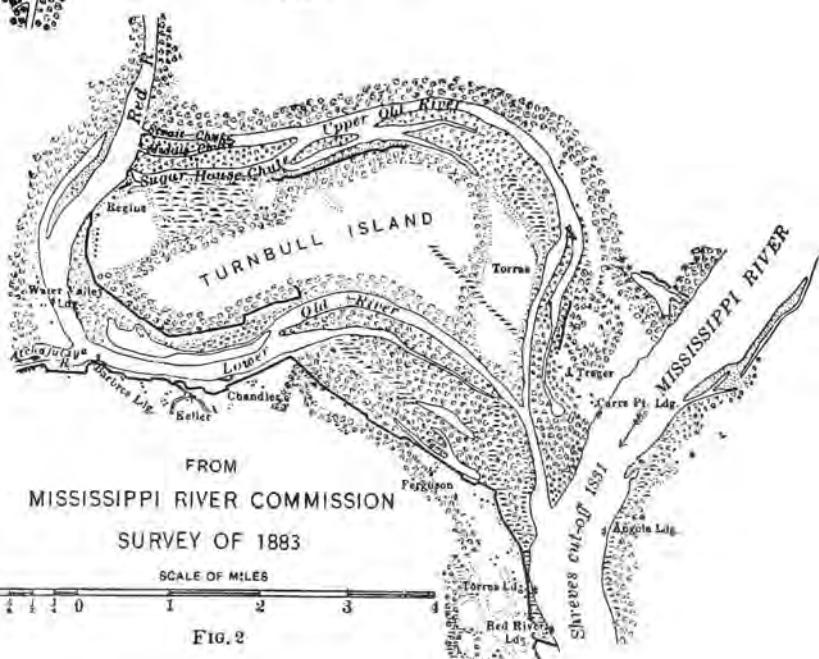
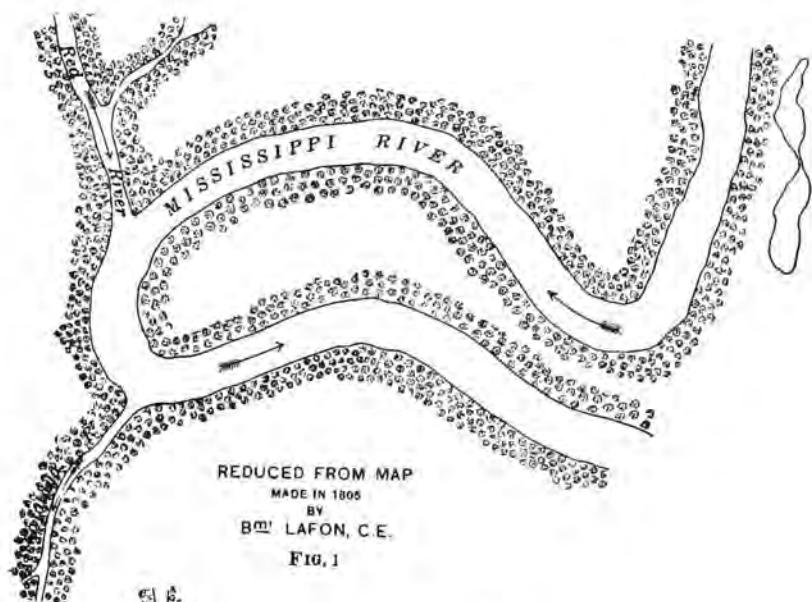
The year 1839 was a good time to try. Abnormally dry months reduced the water level so low that a person could walk across the

Atchafalaya on a 15-foot plank. A few nearby residents set fire to the raft hoping to destroy it. They managed to burn off much of the timber above the water—roasting a number of alligators—but the debris beneath the waterline remained. The raft was as dangerous as ever.³⁴

With no federal aid in sight and private attempts gone awry, only the state had the means to clear the raft. Louisiana had established a state engineer's office in 1833³⁵ and subsequently had appropriated money to purchase and convert three steamers to snagboats. However, this early effort failed miserably. Modified steamers with increased power, strengthened hulls, and windlasses on their decks performed poorly compared to the snagboats that Shreve used successfully on the Ohio, Mississippi, and Red rivers. The Shreve snagboat consisted of two hulls connected by strong timbers. Between the hulls was mounted a timber bulkhead covered with quarter-inch sheet iron. The snagboat would ram snags head-on using the boat's weight, steam engine power, and the force of the current to pry snags loose. The snags were then raised between the hulls with windlasses and sawed into chunks.³⁶ No steamer modifications short of starting anew could match Shreve's design. In 1846, the state engineer desperately pleaded for "one or two good Snag Boats, with the necessary machinery of requisite strength."³⁷

Even though the converted steamers were inadequate, work proceeded on the Atchafalaya River raft from 1840 until April 1842, when the state engineer, George T. Dunbar, reported that Captain William Mayo with the steamer *Franklin* had managed to open a narrow channel through the raft. Dunbar optimistically predicted that the increased current would remove the rest of the raft. Once the raft was completely cleared, frequently inundated lands along the upper Atchafalaya could be reclaimed. To alleviate high water problems below the former raft, Dunbar recommended closing all the bayous that drained Mississippi River water into the Atchafalaya.³⁸

Dunbar's optimism was premature. By 1846, a raft had re-formed extending from two miles above the mouth of Bayou Pigeon to five miles below. By this time, a very impressive engineer had replaced Dunbar. Paul O. Hébert had graduated first in the West Point class of 1840, and soon thereafter became an assistant professor of engineering at the military academy. Before he resigned his commission to accept the appointment as state engineer, he had directed the construction of defenses at the western passes at the mouth of the Mississippi. From 1853 to 1856, he was to serve as governor of Louisiana. In his 1847 report, Hébert stressed the importance of both clearing the raft and closing all the outlets of the Atchafalaya down to the mouth of Bayou Pigeon.³⁹



The Mississippi River at Old River before and after Shreve's 1831 cutoff.

Hébert and Dunbar agreed that the connections between the Atchafalaya River and neighboring bayous should be severed, but for entirely different reasons. Dunbar argued that the bayous should be closed to prevent Mississippi River water that had reached the bayous during flood season from entering the Atchafalaya. Hébert thought that distributary bayous should be closed for an entirely different reason: to prevent Atchafalaya water from escaping *into* the basin. Dunbar wanted to close bayous to prevent flooding on the Atchafalaya, while Hébert wanted to close them to help ensure a sufficient navigation depth. One worried about too much water in the Atchafalaya, while the other feared too little. Herein began an engineering and political dispute undiminished over succeeding decades.

In 1850, one year after a disastrous flood engulfed New Orleans, the new state engineer, Absalom D. Wooldridge, broadened the discussion on flood control by insisting that priority be given to controlling floods on the Mississippi rather than on surrounding streams. He maintained that since levees alone would never be enough to contain Mississippi River floods, many outlets would be necessary to convey Mississippi River water to the Gulf of Mexico. Wooldridge argued that attention first should be given to the natural outlets—the Atchafalaya River and Bayous Plaquemine and Lafourche. The italicized words in his report emphasized, “*The Atchafalaya should be regarded as the great natural drain of Southern Louisiana....* The improvements which have been made in this stream have been made simply with a view to its navigation. By having all its obstructions fully removed, by working on it with a view to making it an available drain, it can readily be made to discharge at least twice as much water as at present.” Likewise, he thought that Bayous Plaquemine and Lafourche should be “well cleared of obstructions.” To complement these natural outlets, Wooldridge recommended artificial outlets at points on the west bank of the Mississippi where the river was prone to overflow.⁴⁰

The requirements for navigation, local flood control, and Mississippi River drainage on the Atchafalaya conflicted. The extent depended on individual plans. Only the necessity of removing the raft once and for all elicited general support. Periodically, the state sent a snagboat into the Atchafalaya to clean up one section or another, but a permanent solution seemed beyond grasp. With few boats, limited equipment, and labor consisting almost entirely of slaves, state engineers could not satisfy the many demands on them. An alternative was to hire a contractor. In an act approved on 16 March 1854, the Louisiana legislature appropriated \$15,000 to improve the Atchafalaya River. After twice requesting proposals without receiving any response,

the state engineer concluded that the work simply could not be performed by contract.⁴¹ Instead, he put a state snagboat in service on the river. Finally, the state legislature appropriated money to build a snagboat to improve the Atchafalaya and its tributaries. The *Atchafalaya* began its work in 1858 and within two years had cleared the last of the raft.⁴²

Even before the raft was completely cleared, the Atchafalaya had been restored as the greatest distributary stream of the Mississippi.⁴³ However, the Mississippi had not kept still since Shreve's time. It had moved eastward from the cutoff and seemed intent on going even farther in that direction. This movement threatened to sever at low water the tenuous connection—upper Old River—between the Mississippi and the Red and Atchafalaya rivers. During low water most of the Red River would flow directly into the Atchafalaya, essentially forming one continuous stream. At the same time, the Atchafalaya raft's removal increased the river's carrying capacity—and the chances that a major Mississippi River flood would sweep away the obstructions in Old River, making way for the Mississippi to flow down the Atchafalaya's channel and permanently abandon the route past Baton Rouge and New Orleans. Amos Stoddard's power of prediction would gain new respect.⁴⁴

In the late 1850s, state engineer Louis Hébert, Paul Hébert's cousin and also a West Point graduate, faced a strange situation. He agreed with Wooldridge that levees alone would not alleviate Mississippi River flooding and even suggested that some levees be torn down. He also agreed that the Atchafalaya River and Bayous Plaquemine and Lafourche should be as free of obstructions as possible to take the maximum amount of floodwater from the Mississippi.⁴⁵ Yet, in 1859, two years later, he admitted that closing the Atchafalaya was the only way to prevent the Red River from completely separating from the Mississippi. "To those who know my views concerning the Mississippi, and my convictions in favor of preserving outlets, this conclusion may perhaps seem singular; but I am, however, forced to it, and if the Atchafalaya is closed, the question arises, when and how is this to be effected."⁴⁶ It was ironic. On the verge of clearing the Atchafalaya, allowing it to be both a "great natural drain" for the Mississippi during high water and an important state transportation artery, Louis Hébert had to consider closing it to maintain the Red-Mississippi connection. Hébert gave no answers to his question, wisely leaving it to politicians who were equally reticent about suggesting answers. The problem Hébert outlined was to be debated for nearly a century.

The Atchafalaya River was hardly the only river in the Atchafalaya Basin that drew the attention of the state engineers. Bayous Lafourche, Plaquemine, and Teche were all important transportation arteries, as were several smaller connecting streams. Clearing these runs was a never-ending task. In 1843, the same year that he cut a channel through the Atchafalaya raft, Captain Mayo and his crew worked on Bayous Courtaleau, Boeuf, Plaquemine, Teche, and Pigeon, among others. Another crew worked in Bayou Black, and a third in Bayou des Glaises.⁴⁷ Each year the employees of the state engineer found new debris and new snags in streams they had cleared the year before. Paul Hébert described the work on Bayou Teche in 1847, after several years of effort:

The Bayou above St. Martinville was in its primitive state, and the work very heavy; the timber being very thick and of live oak. In a distance of 20 miles, 1,455 logs were taken from the bed of the Bayou, 961 stumps and snags removed, three bars cut through, and all leaning trees, interfering with navigation, felled and thrown out. The work was difficult, but has been thoroughly done. The navigation of the Teche is now as good as it can be made to Breaux's Bridge, 115 miles above its mouth.⁴⁸

That same year, Hébert reported 1,887 snags and logs pulled out of Bayou Lafourche in a stretch from Belle Pass nearly to Thibodaux. He complained that lack of equipment hindered his work. He needed a dredge to remove land slides and trees imbedded in the bottom of Bayou Lafourche and also one to clear the mouth of the Red River. In addition, he required new snagboats; the steamers *Franklin* and *Agnes* had sunk the previous year. However, because the legislature denied appropriations for new machinery, Hébert used his small regular appropriation to raise and refit the old steamers. He reported that he had managed to outfit the *Agnes* "in every respect" as a snagboat.⁴⁹

Only a year after Hébert's optimistic report on Bayou Teche, Henry T. Williams, Hébert's successor, visited one cleared stretch. He reported, "There are many logs to be removed, and trees to be cut and canted back, but the whole work ought to be accomplished by twenty hands in four months. The whole distance is about forty-eight miles."⁵⁰ Likewise, Captain Mayo was back at work in Bayou Plaquemine, where he reopened the channel for steamboats and managed to keep it open for the balance of the season.⁵¹

So it went, year after year. The Atchafalaya Basin supplied an inexhaustible conglomeration of stumps, limbs, branches, and natural debris to obstruct stream channels. Sometimes, the state engineers became desperate in their pleas for assistance, not only from the legislature, but from the landowners along the waterways. George Morse described conditions along Bayou Lafourche in 1852:

The trees which were cut down in the bayou last fall should all have been removed outside of the levees, or burned up, together with the brush and tops. If they are left to float, they will probably clog up the bayou and increase the difficulties already existing, and if they do not, they will prevent the free flow of the current, and collect sediment about them. There are other obstructions along the bayou which I think ought to be removed, such as wing dams and sluices to take off water for rice fields, which have been thrown out into the bayous from the levees. These all have a tendency to diminish the current: the banks ought to be as clear from irregularities as possible, and not dug up, as they are in holes, to get earth to form the levees.⁵²

The engineers' work seemed not only futile, but unappreciated. Morse explained, "The public generally understand very little about this kind of business. They think that because the rafts have been broken up once, and the snags once removed, that the work ought to be completed; but such is far from the case. The whole work must be done over and over again, as long as the flood wood continues to come down."⁵³ To no avail, engineers warned plantation owners of the dangers of building drainage canals that emptied into bayous, thereby causing bars and interrupting navigation.⁵⁴ The public wanted the state to help, but did very little to help themselves.

The Louisiana legislature dismissed the engineers' pleas for rational internal improvements development. Instead, it responded to the politics of the moment, passing resolution after resolution directing the state engineer to investigate, survey, or improve this or that stretch of water, whether commercially important or not. Paul Hébert estimated that it would take a quarter of a century to finish the work that the legislature had ordered him to do. Yet, he was expected to finish the projects in one or two seasons. "There is, therefore, no reputation to make in the State Engineer department," he concluded and accordingly resigned.⁵⁵ His successor, Williams, noted that some members of the legislature favor "some grand project, tending to monopoly; whilst the

common roads, small rivers, bayous, levees, swamps and marshes are totally neglected....Others would choose to lavish our means in the form of special appropriations for favourite works; whilst others prefer taking them up in the form of perpetual loans for the use of the State."⁵⁶ George Morse, six years later, wrote:

Almost every one who obtains the passage of a bill for the benefit of a stream near his own home, thinks that particular stream of more importance than any other, and, as he has plenty of law for it, complains if the work is not done; but he forgets the fact that there are a great many others who have the same reasons of complaint as himself, and also that the means at our command can only satisfy a very few in proportion to the whole.⁵⁷

Louis Hébert, as frustrated and upset as his predecessors, stated the problem succinctly: "We have thus far expended a very large sum of money, but have done little benefit; and why is this? Because we have had no well-digested system of operations. We have frittered away our means, doing a little here and there all over the State, completing nothing thoroughly and permanently."⁵⁸ Hébert thought the legislature had paid too much attention to the small streams, whereas the large ones should have been improved first.⁵⁹ He was no doubt correct from an engineer's viewpoint. However, he had to bow to political realities. The challenges were daunting. Unable to develop long-term plans, the state engineer bore the fickleness of both man and nature. In the Atchafalaya Basin, his simple aim was to maintain a passage, no matter how primitive or temporary.

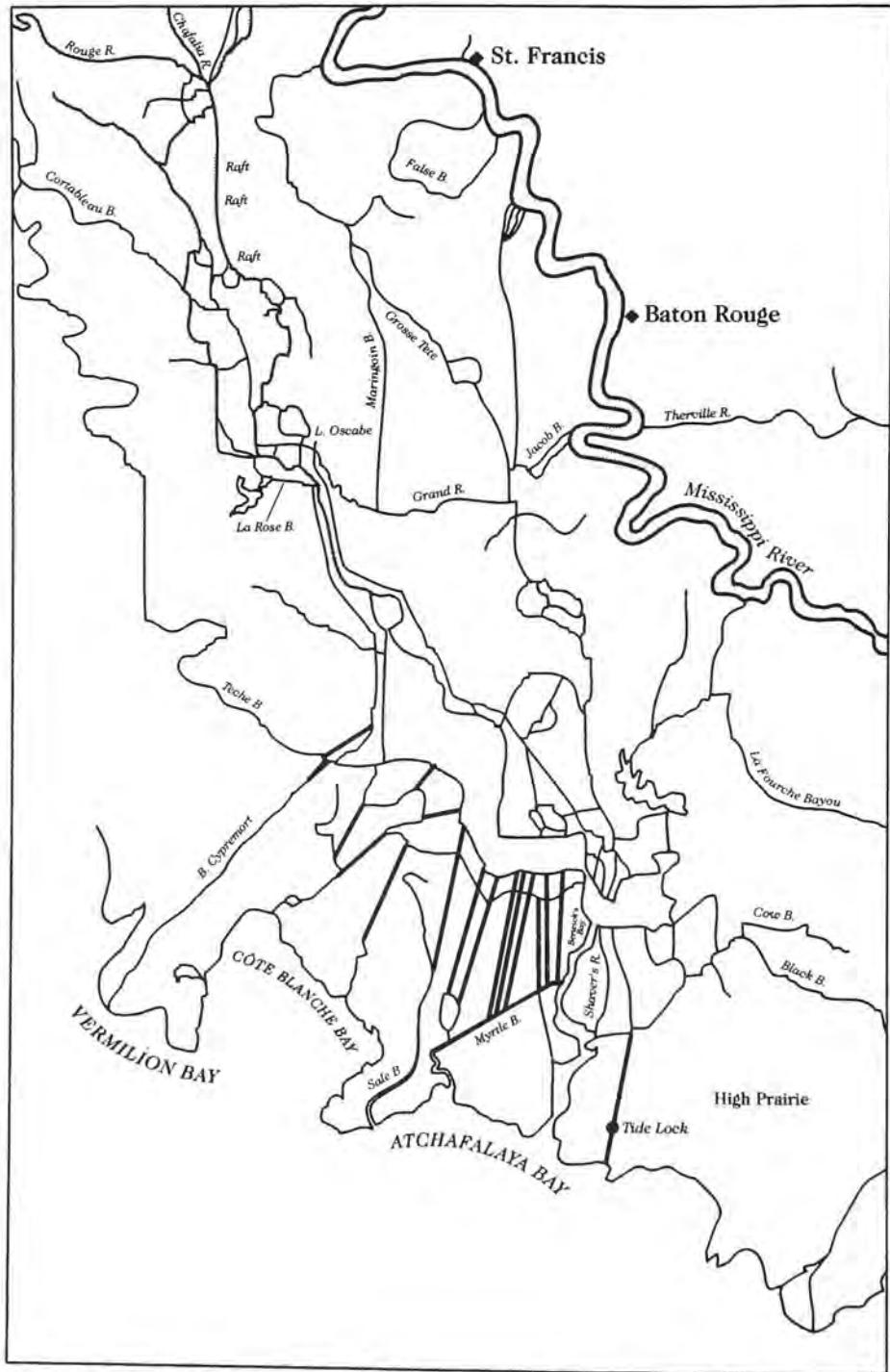
The First Federal Flood Control Plan

MAINTAINING NAVIGABLE STREAMS was essential for Louisiana's economy, but that was only half of the water control problem. The other half was the flooding. Water poured into Louisiana from the entire Mississippi River Basin, which encompassed over 40 percent of the continental United States. Along the Mississippi and its tributaries late winter and springtime floods were common. And when floods occurred, fortunes were lost and lives devastated. Breaks in the levees, called crevasses, often bankrupted the luckless owner of the flooded land.⁶⁰ Riparian landowners petitioned both the state and the federal governments for aid.

Federal aid was a touchy issue involving concerns over equity and justice as well as deeply held beliefs about the appropriate limits of federal authority. Most members of Congress sympathized with the Louisianians whose livelihood depended on a benevolent Mississippi River, but they were not inclined to offer federal dollars for relief, believing that no constitutional authority existed for such activities. Still, the issue of federal involvement in flood control could not entirely be avoided, for the United States possessed an enormous amount of public land along the lower Mississippi. The extent was unclear in the 1820s because of the thousands of unsettled private land claims. The loss of many of the original French and Spanish legal documents complicated the process of confirming claims, as did the necessity of creating an ad hoc surveying system that recognized the old French and Spanish survey lines, but used the newer rectangular survey whenever possible.⁶¹ Resolving the private land claims would relieve the United States of some of its property and, therefore, of some of its problems, but it would still be a very large landholder.

Congress consequently found itself in an ethical dilemma. Was the United States obliged to build levees on public land to protect its neighbors, the private citizens? The question was particularly compelling in light of the century-old legal obligation to build and maintain levees which virtually all Louisiana riparian landowners honored. In December 1828, the House of Representatives called upon the Secretary of the Treasury to provide any information "showing the quantity & quality of the public lands in the State of Louisiana which are rendered unfit for cultivation from the inundations of the Mississippi and the value of said lands when reclaimed and the probable cost of reclaiming them."⁶²

Secretary of the Treasury Richard Rush turned to his subordinate, General Land Office Commissioner George Graham, for the information. The General Land Office had been established in 1812 to register private claims and to survey and sell public lands in the territories and states outside the 13 original states. Commissioner since 1823, Graham himself was neither surveyor nor engineer. He was a Virginia lawyer, an acquaintance of both Monroe and Madison, and would today be considered a career civil servant, having served in the Departments of War and State before he became the Land Office Commissioner.⁶³ Considering his background, he seems an unlikely candidate to draft a flood control plan. Nevertheless, he completed his report two weeks after the House passed the resolution—a testimony both to his confidence and to the rudimentary art that passed for engineering expertise in early nineteenth century America. Even more surprising,



This map is based on that accompanying the report of the General Land Office Commissioner in 1829 on "Application of Louisiana for a Cession of the Public Lands Within her Limits." This section shows George Graham's recommendation for a series of canals leading from the Atchafalaya Basin to the Gulf of Mexico and indicates (upper left) the locations of the Atchafalaya River raft. The spelling of some names has been modernized.

some of his ideas were finally adopted in 1928, when the Army Corps of Engineers initiated the project that is still underway.

To reclaim much of the land that suffered from floods, Graham proposed a floodway that would provide a shorter route for Mississippi water to the Gulf of Mexico. His solution involved creating an artificial diversion—or in his words a “tapping” of the Mississippi—south of Donaldsonville on the west bank of the river. The water could then run into the “Chafalaya.” Once cleared of its raft, the Atchafalaya River would freely convey the diverted waters to the Gulf of Mexico. Graham thought that his plan would reduce the waters at the junction of the Mississippi and Red rivers and “enable individuals to proceed gradually to the reclamation of the whole of the upper plain by common embankments.”⁶⁴

To ensure general flood relief, Graham recommended the construction of an additional outlet leading from Lake Attakapas (now Grand Lake) to the sea. This outlet would be necessary since Lake Attakapas would receive much of the water from the artificial floodway, and the existing outlet via Berwick Bay would not have sufficient capacity to carry the water to the Gulf. The new outlet would entail a series of canals leading from the lake to Bayou Teche and then to the Gulf of Mexico. Graham furthermore recommended a three-foot levee around Lake Attakapas to ensure that the lake could hold sufficient floodwater. Using this series of floodways and diversion channels, and continuing to exploit the natural outlets of Bayous Plaquemine, Lafourche, and Manchac (then called Iberville), Graham was confident of success: “All the waters of the Atchafalaya being thrown into Lake Attacapas & that lake embanked, the whole of the plain between it & the Mississippi would be exempt from inundation.”⁶⁵ To alleviate problems farther north in the state, Graham suggested that diversion channels be cut from the Red River to Bayou Boeuf.

Graham was politic in his conclusion. He suggested that three brigades of the “Topographical Corps” (topographers in the Army Corps of Engineers) could operate “for a few seasons from the 1st of November to the 1st of July” to collect data sufficient to show the practicability and expense of his plan. He continued:

But if it should be found to be impracticable, or too expensive for the present state of the population & wealth of the country, yet the minute knowledge which they would obtain of the topography of the entire plan would enable them to designate different portions of it in both plains [upper and lower parts of Louisiana] which could be reclaimed from inundation at an

expense commensurate with the present capital and population of the Country.⁶⁶

The Louisiana legislature may have appreciated Graham's interest in the state's flood problems, but it had another answer. It resolved that the federal government immediately cede its lands to the state, so the state could sell the lands and use the proceeds for internal improvements.⁶⁷ However, Congress feared the precedent, believing that any such change should apply to all states and not just to Louisiana.⁶⁸ Still, both the House and Senate Committees on Public Lands recognized, in the words of Louisiana Senator Edward Livingston, that "both justice and the interest of the United States" require federal support to safeguard the lands of Louisiana from flooding.⁶⁹ Tennessee Representative Jacob C. Isacks observed that the public lands in Louisiana were worthless unless reclaimed and then protected by levees or other structures. He agreed with Livingston that the problem was not simply a state concern, but a federal matter as well: "If the interest of the United States was alone to be consulted, this branch of the subject ought to receive the earliest and most deliberate attention of Congress."⁷⁰ Although bills were introduced into both the House and Senate to implement federal flood control relief in Louisiana, none passed. However, in 1830, Congress passed the first of several preemption acts that granted settlers the right to purchase a tract of public land at a minimum price.⁷¹ Direct federal aid in the form proposed by the Louisiana legislature—the cession of federal land to the state to be used for reclamation purposes—did not come until nearly 20 years later.

Graham died in 1830, and his successors became preoccupied with other business, including squeezing funds from a parsimonious Congress. His plan became nothing more than a historical curiosity. But, in suggesting a diversion of the Mississippi into the Atchafalaya Basin, he foresaw the Atchafalaya floodway system of a century later.

The Beginning of Federal Assistance: The Swampland Acts

BUILDING LEVEES AND CLEARING RIVERS cost far more than many individuals could pay and more than even the state could easily provide. For years, Louisiana residents had complained that the federal government had not reimbursed them or the state for levee-building

efforts that had reclaimed thousands of acres of public lands. In an 1845 Memphis convention, Louisiana representatives joined other southern and western delegates in calling for federal aid. Senator John C. Calhoun, who chaired the Memphis meeting, later that year introduced into the Senate a convention-sponsored resolution that called for ceding to the states lands subject to flooding. Subsequent conventions at Chicago and Cincinnati expressed similar sentiments. The disastrous 1849 flood inspired renewed appeals by Louisianians for relief and compensation from Washington.⁷²

This time Louisiana residents found a sympathetic audience. Congressional testimony revealed that Louisianians had indeed reclaimed more than half of their swampland. Of an estimated 5.4 million acres of swampland within the state in 1829, 2.9 million acres had been reclaimed by 1849, and millions of dollars had been spent building 1,400 miles of levees.⁷³ While some doubted the accuracy of these figures, none seriously denied that Louisiana residents had done much to reclaim previously unusable lands. On 2 March 1849, Congress passed the first Swampland Act.

This legislation applied only to Louisiana. To help the state construct levees and drains for land reclamation, the act granted to Louisiana "the whole of those swamps and overflowed land, which may be or are found unfit for cultivation."⁷⁴ The idea was that the state sell the lands and use the proceeds to construct reclamation works. A survey supervised by the Secretary of the Treasury, but funded by Louisiana, would determine what qualified as "swamps and overflowed lands." The surveyors were to exclude from this designation all legal subdivisions that did not have their "greater part" periodically flooded. Moreover, riparian lands that had been surveyed into lots or tracts under earlier laws were also excluded.⁷⁵

The second Swampland Act, passed on 28 September 1850, authorized the Secretary of the Interior to have plats of the swampland made. It also granted swampland to other states and more acreage to Louisiana. Eventually, a total of 10.2 million acres were transferred to Louisiana under the 1849 act and another 543,000 acres under the 1850 act.⁷⁶ Land reclamation historian Robert Harrison called the Swampland Acts of 1849 and 1850, "the first important Federal legislation relating to land reclamation."⁷⁷

The 1849 act left unclear exactly which lands were to be granted to the state. Much was left to the discretion of the survey team, but Louisiana appeared not to have the financial capability to reimburse the federal government for the survey. Eventually, on 21 March 1850, the Louisiana legislature appropriated \$12,000 and stipulated that the

expense should not exceed an average of one cent per acre surveyed. State engineer Wooldridge was designated the state representative on the survey team. He immediately began selecting lands that he considered met the criteria of the federal law.⁷⁸

Wooldridge urged the state to develop a definite plan to develop the reclamation works: "We must have a plan—not a plan upon which to expend a few spasmodic, feverish efforts—but a plan which we can steadily pursue till the great ends are fully accomplished."⁷⁹ In response, the Louisiana Senate appointed a standing committee on levees, with Samuel Ricker as chairman. Under his direction, the committee assembled the best engineering and surveying talent in Louisiana and directed the team to survey all the levees in the state and recommend what levees and drainage channels should be repaired, what still needed to be built, and what, if anything, should be torn down. Both the politicians and the technical experts took numerous trips, and few streams were overlooked. The committee also held public hearings and interviewed geologists and other scientists, seeking opinions and information about the best ways to confine the water and reclaim the land.⁸⁰

On 25 February 1852, Ricker filed the committee report with the Senate. It was an impressive document, accompanied by numerous separate reports and maps. The committee presented recommendations on literally every major water issue in the state. It proposed that future levees be declared state works and placed under state control. Furthermore, levee districts and subdistricts should be established, and the levee laws should be revised. However, its most significant finding was that the best flood control plan involved "*a system of artificial outlets, with good levees as auxiliary security.*"⁸¹

The committee's plan called for using the Atchafalaya River channel to transport Mississippi River floodwater to the sea. Consequently, the committee proposed removing all rafts, trees, brush, and other obstructions from the Atchafalaya and various distributary bayous that carried water toward the Gulf of Mexico. Bayou Lafourche was also to be cleared. At the same time, committee members recommended enlarging the outlet at Bayou Plaquemine and creating artificial outlets at Morganza and near the Raccourci cutoff (manmade in 1848), a few miles south of lower Old River. In view of the expense of creating outlets, they suggested delaying this work hoping that "Congress may furnish the means of relief from a danger entailed upon us by the joint labors [building levees] of several states and from which labor the United States derived an enormous fund."⁸²

Considering congressional parsimony regarding public works funding, federal relief seemed hopeless. Still, optimists could point to a couple of encouraging developments. First, the Swampland Acts were passed. Second, in 1850 Congress appropriated \$50,000 for a topographical and hydrographical survey of the lower Mississippi basin. The purpose was to provide information and recommendations for preventing floods along the lower Mississippi and clearing the channel at the river's mouth.⁸³ Subsequently, the War Department split the appropriation between the Army Corps of Topographical Engineers and Charles Ellet, Jr., a well-known private engineer.

Captain Andrew A. Humphreys and Lieutenant Colonel Stephen H. Long headed the Army effort, although most of the work fell on Humphreys. Because Humphreys became ill during the survey, his report remained unfinished. Ellet's submission became the first comprehensive study of flood control on the Mississippi River.⁸⁴

Printed a month before Ricker submitted his document to the Louisiana legislature, Ellet's report encouraged public works advocates. Ellet agreed that outlets must be made and the Mississippi's levees extended and heightened. To this, he added the very controversial idea that reservoirs must be constructed at the Mississippi's headwaters to ensure a permanent flood control remedy along the lower stretch of the river. In his conclusion, he addressed the specific problem of Louisiana. He stressed that Louisiana must "lose no time"⁸⁵ protecting herself from the Mississippi:

Her fate is on this issue; and she is destined to bloom, the garden-spot of this great valley, if her skill, finances, and fortitude prevail, or to be known only as a desolate swamp if



Charles Ellet, Jr. (1810–1862).

she falter and yield to the force of the flood. The question, whether she shall be allowed to stand alone, and protect herself unaided, from the difficulties forced upon her by the States above, or be sustained by that government which represents the power of all the States, is one of deep interest, which must be decided by the justice and humanity of the nation.⁸⁶

While Ellet refrained from entering into political controversies, few who read his report could doubt that he favored some form of federal involvement.

Without a detailed report from the Topographical Engineers and with many politicians expressing continued reservations about federal involvement, Congress took no action on Ellet's report. Nor did the Louisiana legislature immediately respond to the Ricker committee report. Rather, in 1852, it authorized the registrar of the state land office and the state treasurer to sell warrants for a million acres of swamp and overflowed lands at a minimum price of \$1.25 per acre. No parcel was to be less than 40 or more than 640 acres. Proceeds were to be put into a special levee fund that would pay for all state levees built in the future. By that time 6.8 million acres of swamp and overflowed land had been designated within the state. In the first year of swamp-land sales, the state received nearly \$113,000.⁸⁷

Clearly, the legislature had to develop some means of administering the reclamation activities funded by the land sales. It took another look at the Ricker report, accepting some recommendations and dismissing others. For instance, rather than creating levee districts in accordance with natural hydrographic boundaries, as proposed by Caleb Forshey, an engineer who worked for the committee, the legislature crudely divided the state into three major levee and drainage districts.⁸⁸ The Atchafalaya Basin comprised much of the second district. Each district was to have a commissioner, who would appoint engineers and other necessary administrative officials. The three district commissioners formed a board that annually submitted a report containing recommendations for future work. The engineers would determine where levees and drains were to be placed. The legislature also authorized the governor to borrow \$1 million to help capitalize the reclamation program. Bonds were to be issued at 6 percent interest and to be secured by the swamplands.⁸⁹

The minority Whigs in the state legislature were dissatisfied with the commissioner system. They argued that the commissioners should be elected by the people, not appointed by the governor. Considerable patronage was involved since the commissioners appointed the

subordinate officials in their respective districts.⁹⁰ Partly in response to this concern, the legislature amended the 1853 act the following year. The amendment declared, "Nothing in this Act shall be construed as to authorize the said Commissioners to employ the Swamp Land Funds in the repairing or reconstruction of established levees.... it being the true intent of this Act to supply deficiencies in the system of levees along the principal water-courses, and thereby assist in the reclamation and draining of swamp lands."⁹¹ The amendment also emphasized, "...all levees built or repaired under the provisions of this Act, except when such repairs or construction are in progress, shall be under the exclusive supervision of the parochial authorities."⁹² With its authority thus defined, the Board of Swamp Land Commissioners functioned until 1859, when both it and the state engineer's office were dissolved and their functions transferred to the Board of Public Works. That board was in turn abolished in March 1861, two months after Louisiana had voted to secede from the Union. At the same time, the legislature authorized the governor to appoint an engineer to take charge of all property belonging to the former Board of Public Works "and to superintend the completion of all public works now in progress." However, enveloped in the Civil War, the state paid little attention to public works.⁹³

The work of the Swamp Land Commissioners in the Atchafalaya Basin vividly revealed the dangers of poor planning and inadequate attention to natural conditions. The commissioners wanted to strengthen and enlarge the many insubstantial levees of riparian landholders. They advocated closing the gaps in the levees where small streams entered the river and diverting the streams elsewhere. Large streams were to pass into the Atchafalaya through culverts fitted with flood gates. The second district commissioner confidently predicted that this plan would result in reclaiming 600,000 acres of land. Initially, the work centered on deepening and clearing the various channels that helped convey Atchafalaya River water to the Gulf. Streams were dredged, canals dug, and culverts built. The culverts were expensive, costing about \$3.7 million each. Before they could be built, a large quantity of mud and vegetation had to be removed. Each culvert required 25,000 feet of lumber and 65,000 bricks. The plan was ambitious.

However, a year later, a legislative committee investigating the work was unimpressed. One culvert had collapsed, and the committee doubted the others would last long. In fact, conditions were even worse than the committee realized. The commissioner for the second district and his engineer explained the problem they faced at Pointe Coupee,

between the Atchafalaya and Mississippi rivers about 25 miles below Old River. The plan there called for closing the gaps where the bayous entered the Atchafalaya, building levees along the river, and constructing drainage canals. The commission was to build the drainage canals and plug the gaps. The landowners were to build the levees.

The commissioner and his engineer committed two errors. First, they closed the bayous before the drainage canals were dug. This meant that the swamp water had nowhere to go. Second, some of the embankments built across the entrances of the bayous had too little base; they were washing away. Instead of reclaiming and protecting the land, the work created a wetter swampland than before. The angry planters drove the engineers out of the region. Their regard for the commission sank even lower in 1858 when they discovered that a contractor had been paid out of swampland funds, but had done no work. It was problematical that the Atchafalaya Basin had profited at all from the work of the Swamp Land Commissioners.⁹⁴

What may have been significant in the long run were the procedures and practices established rather than the practical results accomplished. Before 1850, the state devoted its efforts to clearing streams and improving navigation. However, the Swampland Acts forced the state to address reclamation problems as well, and state government assumed the leading role in planning and developing an integrated levee system. Although this burden involved the Louisiana legislature in the usual political disputes over the distribution of funds, the politicians did provide for ongoing inspections and funding for the system. An 1856 state law authorized police juries to pass ordinances regarding the maintenance of levees, appoint levee inspectors, and assess taxes for levee construction and maintenance.⁹⁵ It seemed as if Louisianians were slowly developing a workable approach toward solving their navigation and flood problems on the Atchafalaya and elsewhere.

So much depended on the levees. They protected the growing plantations and towns along the bayous and helped provide navigation channels during flood season. They enabled development and largely defined—and confined—the socioeconomic order. Life itself depended on the strength and height of these earthen fortresses; periodic inspections and rebuilding of the levees were critical. But nothing could prepare the levees against nature's onslaughts. Rather than reshaping nature, the levees often seemed at nature's mercy as they sank into the swampy soil and were overtapped or destroyed by surging floodwater. Succeeding generations faced the same incessant cycle of deterioration

and rehabilitation, of threats of Armageddon followed by the promise of salvation. Into the twentieth century, the cycle continued.

Progress was not easy, and natural obstacles and the limitations of technology were not the only obstructions. Institutional relationships and legal interpretations also affected developments. In this antebellum period, the appropriate relationship between states and the national government ignited intense emotions, and not just in the South. Legal and constitutional reservations constrained ambitious plans and frustrated the best intentions. Abraham Lincoln, a young Whig congressman from Illinois, succinctly captured the problem in his denunciation of President James K. Polk's veto of a rivers and harbors bill in 1848: "The just conclusion from all of this is that, if the nation refuses to make improvements of the more general kind because their benefits may be somewhat local, a state may, for the same reason, refuse to make an improvement of a local kind because its benefits may be somewhat general. A state may well say to the nation 'If you will do nothing for me I will do nothing for you.'"⁹⁶ The sentiment would elicit a hearty "amen" from many Louisiana politicians over the next century.

Chapter 2

Interregnum: Growing Federal Involvement

THE PERIOD FROM JUST BEFORE THE CIVIL WAR to the early 1880s may be considered an interregnum in the story of the Atchafalaya Basin. Devastated by the Civil War and reconstruction, Louisiana attempted to reconstruct levees and remove navigation obstacles despite corrupt politics and an impoverished treasury. Lower Mississippi navigation was, of course, essential to national commerce, so the federal government could hardly afford to ignore the situation. Yet, historically Congress had always had constitutional reservations about involvement in river improvements that seemed to favor one state over another.

The emergence of the Republican party after the Civil War, with its Whiggish proclivity to use the government to stimulate business, signified major changes in the congressional attitude. Rather than relying on the genius of the common man, Republicans placed their faith in science, technology, and sound expert advice to ensure a more glorious future.¹ Indeed, by century's end, many Democrats had also embraced the notion that rational administration required professional expertise. Within the federal bureaucracy, Army engineers echoed the call for applying science and technology to society's problems, and these included the control of floods and the preservation of navigation on the nation's streams, especially on the Mississippi River.

The Humphreys–Abbot Report

THE FEDERAL GOVERNMENT'S INTEREST in the Mississippi delta (the area below Cape Girardeau, Missouri) grew in the 1850s. Increasing commercial transportation on the Mississippi compelled Congress to authorize Army engineer efforts to eliminate the sandbars obstructing the mouth of the river. Ships sometimes had to wait for weeks outside the mouth for a propitious time to make a run over the bars and on to



Andrew Atkinson Humphreys (1810–1883) as a brevet major general. Humphreys rose to the position of a corps commander during the Civil War. He served as the Chief of Engineers from 1866 to 1879.

New Orleans.² Floods, too, continued to capture national attention. Particularly calamitous floods occurred in 1858 and 1859. Deaths, property loss, and general economic dislocation increased the cries for remedies and federal assistance.

Then in 1861, Captain Humphreys finally submitted his massive *Report upon the Physics and Hydraulics of the Mississippi River* authorized by Congress in 1850. The report, co-written by Lieutenant Henry L. Abbot, became the most significant contribution that the Army engineers made to hydraulic engineering in the nineteenth century.

The authors examined the early formulas bearing on stream flow and, based on their research on the lower Mississippi, found all of them lacking. They devised their own theory, which subsequent research also showed wanting. Nevertheless, the report was so complete and so full of new data that it had an enormous influence on the development of the Mississippi and other alluvial rivers around the country. Humphreys received national and international recognition for his work.

Basically, Humphreys and Abbot argued that “levees only” could control the massive flooding on the lower Mississippi. In their words:

It has been *demonstrated* that no advantage can be derived either from diverting tributaries or constructing reservoirs, and that the plans of cut-offs, and of new or enlarged outlets to the gulf, are too costly and too dangerous to be attempted. The plan of levees, on the contrary, which has always recommended itself by its simplicity and its direct repayment of investments, may be relied upon for protecting all the alluvial bottom lands liable to inundation below Cape Girardeau.³

In insisting on this levees only policy, the two Army engineers explicitly rejected Charles Ellet's idea of reservoirs on the headwaters to help control flooding. They also supported those who opposed cutoffs and outlets, not because these measures might not alleviate flooding, but because they were "too costly and too dangerous." Still, they recommended consideration of an outlet near Lake Providence, Louisiana, because levees built in the absence of outlets in this area would have to be of enormous height to hold back the floodwater. However, such an outlet, they also pointed out, could prove disastrous during a flood to people on the lower part of the Tensas and Black rivers.⁴



Henry Larcom Abbot (1831–1927) as a brevet major general. Following the Civil War he commanded the new Engineer School of Application and Engineer Battalion at Willet's Point, New York (1866–1886).

Humphreys and Abbot paid close attention to the geological history of the lower Mississippi. They concluded that the three outlets—Atchafalaya, Plaquemine, and Lafourche—were not delta streams whose beds were formed in their own deposits, but natural drains of the Mississippi. All three shared a characteristic that had already been noted of Bayou Lafourche: as one proceeded down the bayous there was an "extraordinary diminution of the area of cross section and of the slope."⁵ In the case of the Atchafalaya, the fall in the first half of its length was two-thirds of its entire fall to the Gulf of Mexico. This situation contributed to the difficulties of controlling the floods on these bayous. The less slope and cross section downstream, the more water upstream. To solve the problem, the cross section of the bayous had to be enlarged to equalize the discharge capacity with the amount of water entering the bayous. This could be done either through constructing levees or dredging. Humphreys and Abbot recommended the former as the "readier and more economical mode."⁶

Bayou Teche was a different matter. This bayou belonged to a class of streams that had been gradually separated from the Mississippi.

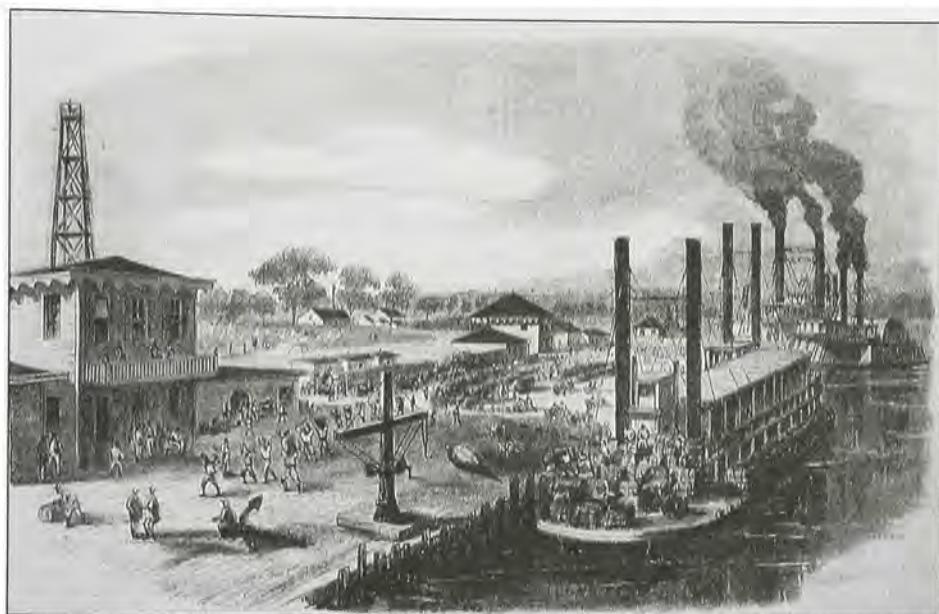
Humphreys and Abbot suggested that this bayou was flowing through a partially deserted channel and that it was probably a “principal branch, if not the main stem, of the Red River.”⁷ They argued against the theory that the Atchafalaya was ever connected to the Red River, basing their conclusion on their comparison of the discharge capacity of the Red River with the far lesser discharge capacity of the Atchafalaya. To the two Army officers, it appeared far more probable that “the Atchafalaya was a mere valley drain, discharging clear water, until the Mississippi, by eroding its own bank, converted it into a waste weir, when, becoming a muddy stream of increasing discharge, the Atchafalaya began to raise its banks.”⁸ As for severing the connection between Old River and the Atchafalaya, the two authors expressed strong opposition. Such a project would be disastrous, they insisted, since it would sacrifice an important (natural) outlet for the Mississippi’s floodwater.⁹

Generally, southern politicians and engineers supported the “levees only” policy. It appeared to be common sense and confirmed the wisdom of the many riparian owners who had placed their faith in levees. Moreover, building levees actually held out the promise of reclaiming lost land rather than wasting valuable farmland through the construction of outlets and diversion structures. Consequently, after the Civil War the question was not whether levees should be rebuilt in Louisiana, but who should finance the effort and which levees should be built first.

The Civil War and the Atchafalaya Basin

THE CIVIL WAR CHANGED LIFE in the Atchafalaya Basin forever. Before the war, optimism pervaded the region. The Atchafalaya River raft was being cleared, promising faster communication and higher profits for plantation owners, and by 1857 the New Orleans, Opelousas and Great Western Railroad stretched from Algiers, opposite New Orleans on the Mississippi, to Brashear City (renamed Morgan City in 1876) on the Atchafalaya River.¹⁰ It was the first railroad in the basin. Soon after reaching Brashear City, the railroad company joined with Cornelius Vanderbilt to establish steamship connections from Berwick Bay to Galveston (via some rather dangerous, bar-ridden channels in Atchafalaya Bay).¹¹ A year later, Charles Morgan’s Southern Steamship Company took over Vanderbilt’s routes. Plans, aborted by the Civil War, were made to extend the railroad routes to New Iberia and, eventually, all the way into Texas. With “40 homes, a Catholic

Church, and a number of businesses," Brashear City seemed on the verge of becoming an important commercial center, and the state legislature officially recognized the town in 1859.¹²



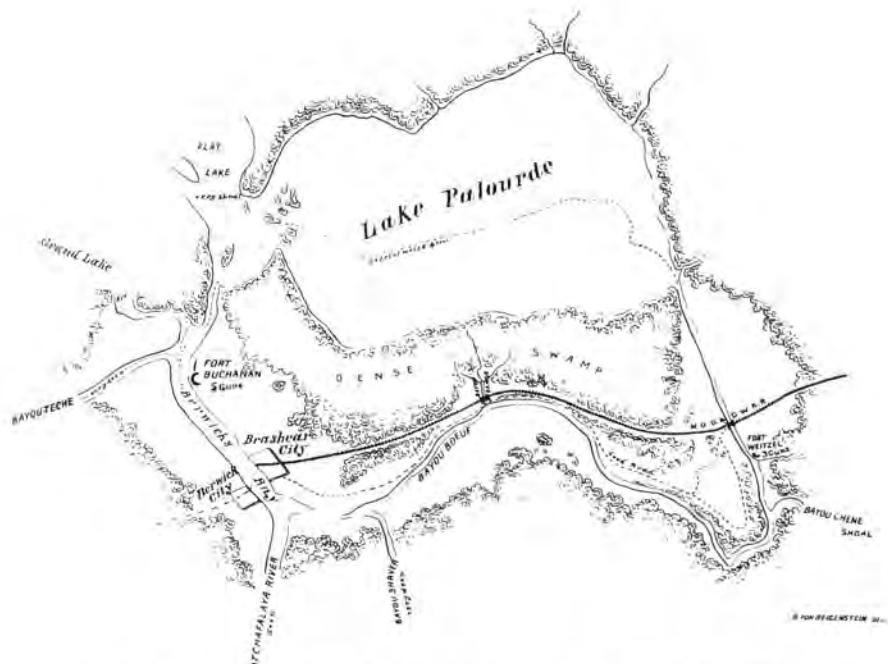
"King Cotton Captured—The Cotton of the Attakapas Region Pouring into Brashear City, Louisiana," sketched by J. R. Hamilton. The scene is probably from the early 1870s, but it could just as well be from the late 1850s.

Brashear City became the terminus, too, for steamboats on Bayou Teche. Rather than continuing to send boats on the relatively dangerous route across the Atchafalaya Basin, the steamboat operators carried cargo to Brashear City, where it was transferred to railroad cars heading toward New Orleans. This route was so superior to the one through Bayou Plaquemine that, in 1857, 45 prominent St. Mary Parish planters and merchants decided that Bayou Plaquemine was no longer needed. They therefore requested the state legislature to dam the bayou to relieve the basin of floodwater.¹³ This was not done until ten years later, when the Iberville Parish police jury had Bayou Plaquemine's connection with the Mississippi severed.¹⁴

The entire Atchafalaya region impressed travelers with its beauty and industry. Pattersonville (Patterson), Franklin, New Iberia, St. Martinville, and Vermilionville possessed the comforts and institutions of a settled life—banks, schools, hotels, churches, distilleries, post offices, and commercial stores. Franklin even boasted macadamized streets, an extensive ice house, two printing offices, and a female seminary. Far from being an outpost of civilization, it had become a

summer residence for refugees from the bustle of New Orleans.¹⁵ While Atchafalaya residents may not always have had moonlight and magnolias, their futures seemed bright—until war abruptly ended their dreams.

It may seem strange that any army would bother with a maze of streams and swamps, but during the Civil War, Union and Confederate troops moved back and forth between Bayous Teche and Lafourche seeking to inflict decisive blows on each other. Union Major General Nathaniel P. Banks controlled the basin for much of the war and captured Port Hudson, the last major Confederate stronghold on the Mississippi River following the surrender of Vicksburg. The outnumbered Confederate troops nevertheless inflicted embarrassing defeats and prevented Banks from leading an expedition into Texas.¹⁶



Army engineer map showing Union positions around Brashear City in April 1863. Brashear City was probably the most strategic military location in the Atchafalaya Basin.

The Union campaigns in bayou country destroyed the plantation economy. Soldiers ripped apart fences and buildings to use for firewood, took livestock and supplies, and vandalized houses. The slaves, upon whom the economy depended, fled. The Louisiana bayous became a refuge for southern draft dodgers, destitute blacks, and a generally demoralized population. Meanwhile, the neglected levees deteriorated further during disastrous floods in 1862 and 1865. In

many cases, what nature had started, man completed. Union soldiers systematically destroyed sections of the levee system, not only along the Mississippi, but along Bayous Lafourche and Teche and the Red and Atchafalaya rivers. Partly in consequence, floods in 1865–67 ruined much of the land around the periphery of the Atchafalaya Basin for agriculture. No longer able to farm, some Acadians turned to fishing and lumbering in the swampland to survive.¹⁷ Meanwhile, sugar cane growers, with no capital and with machinery destroyed through neglect and war, went bankrupt. In place of privately owned plantations, large sugar corporations developed which utilized new technologies and scientific approaches. Small sugar houses on the plantations could not compete with the large factory mills.¹⁸

Cotton planters generally fared better. Cotton was still picked by hand, and plenty of laborers were available. The only problem was paying them. Lacking money and credit, the plantation owners turned to a system that eliminated wages entirely—sharecropping. The planters provided land, a cabin, tools, and seed to a sharecropper and his family. At the end of the year, the owner took half of the sharecropper's cotton. The other half was turned over to the plantation store to pay for clothing and food received on credit during the year. The sharecropper often ended in debt, and state law prevented an indebted sharecropper from moving.¹⁹



"Taking Cotton and Sugar Aboard a Steamer at a Plantation on Bayou Teche,"
sketched by C. E. F. Bonwill.

Many turned to a relatively new crop, rice. The increase in rice production after the Civil War did not occur immediately. Indeed, between 1870 and 1880, cultivation actually decreased in most areas,

another victim of the economic dislocation caused by Reconstruction. However, rice became a major crop in the 1880s. During this decade, rice production increased by nearly two-thirds in the Atchafalaya Basin parishes of Franklin, Lafayette, Lafourche, Plaquemines, St. Landry, and Terrebonne. Still, some Cajun families gave up on the Atchafalaya Basin and moved to the prairies of southwest Louisiana where they joined transplanted northern farmers in developing a major rice-growing region.²⁰

Once More, the Levees

LEVEE RECONSTRUCTION WAS ESSENTIAL to the economic development of the Atchafalaya Basin and, indeed, to the entire state. Governor James M. Wells appointed a 21-member Board of Levee Commissioners in 1865 to supervise the repair of all state levees that it judged necessary "to protect the alluvial land from being overflowed."²¹ Early the following year the state legislature confirmed the appointments and authorized the governor to issue "certificates of indebtedness" to the amount of \$500,000 to defray the expenses of rebuilding the levees.²²

The board memorialized Congress for help, noting that renewed flooding threatened the state's partially repaired levee system: "Of the sums expended, heavy losses must ensue either to the contractors or State for it will be found when the waters recede, that the earth recently thrown up has been carried off to the adjacent swamps, and the whole work will have to be commenced *de novo*."²³ The commissioners were not above exploiting the sympathies of the Radical Republicans in Congress. The memorial emphasized the pitiable condition of the levees that made life for the freed slaves "worse, if possible, than [for] their white neighbors and employers. Helpless and without means, their condition calls loudly for some permanent form of relief which will secure to them constant work and support, which can only be insured by a system of levees, so constructed and managed as to give better protection."²⁴

Hundreds of well-established people—bankers, farmers, plantation owners, politicians, and merchants—also united to petition Congress for relief. They urged the federal government to help reconstruct and strengthen approximately 500 miles of levees on the Mississippi River and about 900 miles of levees on other state streams and bayous, noting the "great advantages of Union" afforded Washington the opportunity of aiding the prostrate state.²⁵ They even suggested—with what sincerity one may wonder—that the estimated 7 million acres of

swamplands to be reclaimed through a levee system could be set aside for settlements of freedmen.²⁶ Although the petitions varied in their demands, most Louisianians agreed on the reasons justifying federal support for levee building: federal troops destroyed the levees, Louisiana's commercial and agricultural development fostered the national as well as the state economy, freedmen would benefit, and the project was too vast for one state to finance.

The Reconstruction Congress did help clear the Mississippi River, for obstructions undeniably hindered both northern and southern commerce. In 1866, it authorized the Secretary of the Navy to transfer to the Secretary of the War portions of the Mississippi River fleet which could be used "without detriment to the public service" for raising snags and removing obstructions in the western rivers, including the Mississippi. The next year, Congress appropriated \$200,000 to improve the mouth of the Mississippi. Part of the appropriation was used to build two dredge boats. In 1868, Congress authorized another \$40,000 for Mississippi River improvements.²⁷ In a short time, river traffic returned and increased.

However, Congress would not authorize levee construction. Some congressmen continued to believe such a policy was unconstitutional because it involved the use of public monies to benefit private property owners along the Mississippi. Moreover, a federal survey failed to substantiate all the claims of the southerners. In December 1865, Secretary of War Edwin Stanton ordered Humphreys (by then a brevet major general and soon to be Chief of Engineers) to inspect the Mississippi River levees and repair those he thought vital to commercial or agricultural interests.²⁸ Although the Louisiana Board of Levee Commissioners enthusiastically approved Stanton's choice to inspect the levees, the commissioners were disappointed by the practical results of the survey.

Humphreys agreed that "some authority entirely beyond the influence of local interests" was needed to build the Mississippi River levees in Louisiana.²⁹ North of Louisiana, Humphreys concluded, commercial and agricultural interests were not affected enough to justify federal aid. The planters were able to repair the levees themselves.³⁰ However, delegations from Tennessee, Arkansas, and Mississippi were unlikely to support relief for Louisiana without obtaining federal aid for their own states. Unable to decide, Congress offered little federal aid to any of the states.

Humphreys submitted his report in May 1866, just after a flood had inundated the lower Mississippi. A much greater flood came the following year. Federal aid, if authorized, would have been too late to

ameliorate these disasters.³¹ Louisiana was left to its own devices, and the state developed a system of levee management wholly fitting the Byzantine politics of the Reconstruction era. The overlapping functions, the lack of clear centralized authority, and widespread corruption nearly overwhelmed the task of levee construction.

Lack of funds as well as unqualified administrators contributed to the chaos. By 1867, the state had already spent \$2.7 million for levee reconstruction, but the flood that year wiped out much of the repair work.³² The state legislature authorized the sale of \$4 million more in bonds for levee construction, and the governor appointed a new Board of Levee Commissioners.³³ However, the state's credit was so poor that the commissioners found it difficult to sell the bonds. Buyers paid only 50 or 60 cents on the dollar.³⁴ The next year, 1868, the legislature reestablished the Board of Public Works and charged it with making surveys for "levees and other public works" and protecting "as far as possible the swamp lands from overflow."³⁵ This board was again short-lived. In 1871 the legislature replaced it with a Board of State Engineers, consisting of a chief state engineer and two assistant state engineers to be appointed by the governor. The board was to recommend needed public works to the governor and the legislature and was to carry out the engineering work for most internal improvements including navigation, flood control, and drainage. This work included the projects of levee districts as well.³⁶

In 1871, the legislature also established the Louisiana Levee Company, thereby ensuring complicated and overlapping jurisdictional questions with the Board of State Engineers. This company was one of the worst consequences of carpetbag politics. The legislature gave two northerners, Charles T. Howard and John A. Morris, in the guise of the Louisiana Levee Company, the rights to "take charge of, manage, control, construct, maintain, repair and keep in repair all the levees in the State on the Mississippi River, its tributaries and outlets...for the period of twenty-one years from the day when this act shall take effect."³⁷ In return, the state promised annual payments equaling .02 percent of the assessed value of the taxable property within the state.³⁸ In the same session, the legislature created a three-person "Commission Of Persons On The Levees of Louisiana" to inspect the work of the company and make report monthly to the governor. One commissioner was to be appointed by the governor, another by the President of the United States, and the third by the company itself.³⁹

The system was predictably cumbersome. A Commission of Engineers composed of one appointee from the company and one from the state selected levee locations and developed the engineering design

plans. The Board of State Engineers then made triplicate copies of the plans, profiles, and estimates. The company constructed the project using hired laborers or subcontractors. After the levee was completed, a state engineer and a company engineer measured it and jointly filed duplicate reports giving all their measurements and calculations. The reports went to the Board of State Engineers and the president of the levee company, who compared them to the original design plans. After all agreed that the original requirements had been met, the Board of State Engineers issued certificates to that effect. Upon receiving these certificates, the Commission of Persons on the Levees of Louisiana also inspected the levees and, once satisfied, issued its own certificates to the state governor and the president of the levee company. These certificates showed the exact amount of work done by each contractor, planter, or other individual and became the basis for any financial settlement with the Louisiana Levee Company.⁴⁰

The company began its work slowly. The shareholders seemed far more interested in making money than repairing levees. Little actual construction began. Under pressure from state authorities, the company reorganized within a year after its establishment, forming a directory composed of "the most respectable and responsible citizens in the State, whose financial ability and talent none can dispute."⁴¹ Once funds were available, the two-man Engineer Commission prosecuted its work as vigorously as possible. By the beginning of 1872, "the spade and wheelbarrow were busy over the whole State."⁴²

The Engineer Commission contained impressive talent. The company chose Caleb Forshey as its representative. Forshey's work on the Mississippi River dated back to the 1840s. He had contributed much to both state and federal surveys of the river. M. Jeff Thompson, the state engineer, represented the state. Both men had impeccable credentials as engineers and were widely respected. Although not legally required, in 1873 they submitted a report to the legislature because they considered their work of "momentous character" to the state.⁴³ In it, they identified two problems severely hampering reclamation efforts. First, several rivers, including the Atchafalaya, were still inadequately surveyed. Second, Louisiana could not be satisfactorily protected against floods unless Arkansas cooperated. The problem was that floodwater from the Arkansas River and from the Mississippi River as far north as Napoleon, Arkansas, poured into Louisiana, overwhelming the Red River and even portions south of the Red. If the states could not cooperate, the commissioners urged the legislature to seek federal assistance.⁴⁴ Finally, the commissioners rejected cutoffs for flood control. They insisted, "Experience teaches us that it is nearly

impossible to maintain a shortened river, and it will certainly be far more expensive than the rebuilding and maintenance of levees."⁴⁵

Forshey and Thompson's examination of the Atchafalaya convinced them that property owners along the river need not fear another flood as disastrous as the one that occurred in 1850. Nor did they anticipate that the Red River might join with the Atchafalaya as some experts had predicted. Their measurements of the river's depth and width did not markedly differ from those Forshey had taken in 1850, 22 years before. The river, they wrongly concluded, was not enlarging. The engineers thought that the 20 miles of levees along the Atchafalaya south of the junction with Old River helped prevent the enlargement.⁴⁶ As for Bayou Lafourche, they recommended closing its outlet to the Mississippi at Donaldsonville. The bayou's role as an outlet for Mississippi River floodwater was negligible, they argued. Moreover, there was a natural tendency for the bayou to close itself at its lower end. The bed was rising south of Lockport; and, even though the levees were raised each year, "no single year has passed, ...that there has not been a crevasse on the lower Lafourche which has destroyed ten times the cost of all the freight in and out of the stream."⁴⁷ The only way to prevent this constant and unnecessary expense was to prevent Mississippi River water from entering the bayou. Henry Hodges, a civil engineer working for the commission, expressed the hope that through this means "a large area of now worthless land" can be reclaimed for cultivation.⁴⁸

Although grossly inefficient, the Louisiana Levee Company managed finally to rebuild some of Louisiana's levee system. About 270 separate levee projects were completed in 1871–72. By 1875, over 5.5 million cubic yards of earth had been converted into new levees at a cost of nearly \$2 million.⁴⁹ Still, the company failed to close some of the large crevasses on the Mississippi, such as those at Morganza and Bonnet Carré, and some of its levees were not constructed to a high enough grade.⁵⁰ In May 1877, following the withdrawal of federal troops from Louisiana and the end of Reconstruction politics, the Louisiana legislature repealed the act granting the monopoly to the Louisiana Levee Company, thereby ending the company's dealings.⁵¹

During the 1877 extra session, the legislature also greatly reduced the powers of the Board of State Engineers. Rather than the board, local police juries were to supervise levee work. The board was simply to take charge of records of the state engineer department and advise the governor of those levees that were beyond the means of local authorities to repair. The following year, the legislature changed the procedure once again by creating five levee districts to supervise levee

construction. This act also authorized levee taxes and delegated actual control of the levees to the police juries.

Finally in 1879, the legislature reestablished the system created in 1871. The Board of State Engineers, again to be composed of one chief and two assistant engineers, was to survey all "water courses and public works and levees of the State" and to recommend what repairs the state should undertake because they were beyond the means of local authorities. The act also created six levee districts and authorized the governor to appoint commissioners for each district. Finally, section six of the legislation authorized a tax assessment for levee construction purposes.⁵² Although later modified, this law formed the framework of state levee management. The Board of State Engineers remained until 1940, when a Department of Public Works replaced it.

Most of the Atchafalaya Basin was in the fourth levee district. This district was renamed "The Atchafalaya Basin Levee District" by Act No. 97 passed by the Louisiana legislature in 1890. The officials of the



Louisiana levee districts subject to Mississippi River floods.

district, which was the largest in the state, were given the responsibility to obtain rights-of-way, clear land, have levees and drainage ditches built and repaired, assess taxes, and perform other related duties. The district has been in continuous existence since 1890.⁵³

The Federal Role Increases

MOST LOUISIANA POLITICIANS REALIZED that the state could not construct an adequate levee system without federal aid and that one or two disastrous floods could thwart the state's best efforts to stabilize and invigorate its commerce and industry. Appeals for federal assistance continued throughout the Reconstruction era. In one instance in 1876, the legislature urged Congress to pass a bill to provide for the rebuilding of all levees along the Mississippi in Louisiana. The resolution moreover requested the federal government to assume "the entire and exclusive control of a levee system of the Mississippi River and its tributaries in lower Missouri, Arkansas, Mississippi and Louisiana."⁵⁴

Just as in the period before passage of the Swamp Land Acts, Louisiana's petitions gradually gained converts in Washington. Although many senators and representatives retained reservations about federal financing, sympathy grew in the Republican Congress for some sort of contribution. Each year brought further signs of a shifting policy. In 1866, soon after Humphreys had submitted his report on the state of Mississippi River levees, the Senate Select Committee on Flood Control concluded that southern states would be unable to repair their levees without federal support. The following year, the Senate Finance Committee decided that such aid was within the power of the Constitution. In 1868, the House instructed its Committee on Roads and Canals to consider using Mississippi River levees for national roads, thus justifying federal funding. While no substantive federal aid came from these early discussions, the ground was being prepared for more direct action.⁵⁵

In 1871, in response to a congressional resolution, the Corps of Engineers established gauging stations at specific points along the Mississippi (continuous gauging of the Mississippi's waters dates from this time). Then, following the flood of 1874, Congress authorized the President to establish a commission of three Army engineers and two civilian engineers to study the best system for the "permanent reclamation and redemption" of the alluvial basin of the Mississippi River. Paul Hébert, the former Louisiana governor and state engineer, became one of the two civilian members. The commission's report, submitted the

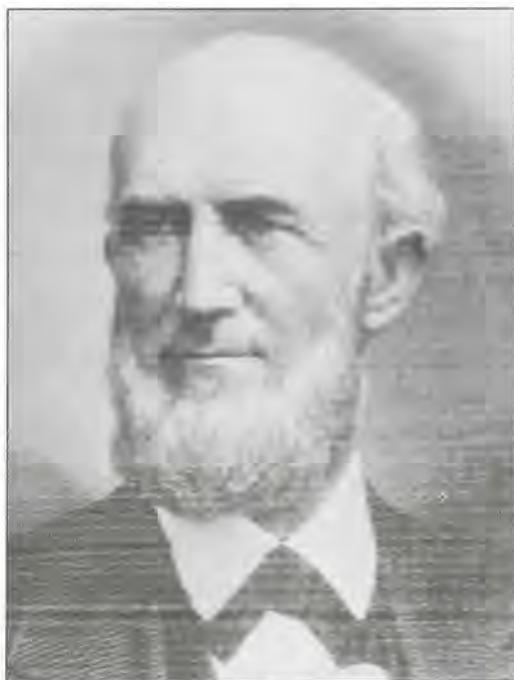
following year, found the existing levee system defective because of poor levee organization, insufficient levee height, "injudicious" cross section and construction, inadequate inspection, and faulty levee location. In fact, even with the reconstruction that had been accomplished since 1865, the levees were in worse condition than before the Civil War. The commission fully supported the conclusions of the Humphreys-Abbot report. Cutoffs, outlets, reservoirs, and diversions were unnecessary. A general system of levees stretching along the entire lower Mississippi River would do the job. The commission thought it impossible to complete such a levee system without federal aid.⁵⁶

Other signs pointed to changes in thinking about the Mississippi. The same year Congress authorized the creation of the levee commission, it also authorized surveys of various transportation routes, including the Mississippi River from Cairo, Illinois, to New Orleans. The survey was entrusted to Major Charles R. Suter of the Corps of Engineers, who completed his reconnaissance by publishing maps (on a scale of one inch to one mile) showing the river channel, sandbars, tributaries, islands, and the various navigation obstructions.⁵⁷

The following year, Congress authorized James B. Eads to construct jetties at the South Pass of the Mississippi to obtain a permanent ship channel. This project, which General Humphreys and many Corps officers thought futile, proved eminently successful, thereby ensuring Eads' reputation, undermining the Corps' stature, and, above all, finally providing the necessary channel for seagoing ships to the port of New Orleans.⁵⁸

In the mid-1870s, the Corps of Engineers did some bank protection work to prevent erosion along the Mississippi River. This work

was mainly confined to the improvement of harbors, although it certainly aided flood control too. In 1878, General Humphreys, by then Chief of Engineers, created another board, composed of five Army



James Buchanan Eads (1820-1887).

engineer officers, to consider ways to improve low water navigation of the Mississippi and Missouri rivers. The members concluded that a levee system might aid commerce during high water, but would have little or no effect upon low water navigation. They pointed to caving banks as the greatest obstacle to river improvement and levee maintenance. Significantly, the board's report considered flood control and navigation improvement as identical.⁵⁹

However, the 46th Congress of the United States—the first since the Civil War in which Democrats controlled both Houses—decided that the future of the Mississippi River should not be left entirely to the Army. On 28 June 1879, President Hayes signed a bill that created the Mississippi River Commission, to be composed of seven members: three Army engineers, one representative from the Coast and Geodetic Survey, and three civilians of whom two must be civil engineers. The president of the commission was to be one of the Army engineers. Duties of the commission included developing plans to improve navigation, control floods, and “promote and facilitate commerce, trade, and the postal service.”⁶⁰ Congress also provided enough funds to cover the commissioners’ salaries and to buy the necessary equipment to do the surveys and inspections. The willingness of Democrats to support this legislation reflected an activism and support for governmental intervention in commercial and transportation enterprises clearly at odds with their antebellum stand and more in line with traditional Whiggish, and Republican, principles. Part of the reason for this change surely was the influx of senators and representatives from the solidly Democratic South, all of whom dreamed of economic regeneration of their region. In any case, establishing a permanent planning commission for the lower Mississippi marked a watershed in Democratic, and national, politics.⁶¹

The Louisiana delegation had energetically supported the establishment of the Mississippi River Commission and hoped it would assume the entire responsibility for levee construction in the state. Delegates to a state constitutional convention held within a month after Congress had approved the commission joined in this desire. The new state constitution authorized the establishment of levee districts (already established by legislative act earlier in the year) and allowed the districts to impose a tax for levee construction and maintenance not to exceed five mills per dollar on “taxable property situated within the alluvial portions of said districts” (Article 214). In 1884, a constitutional amendment doubled the rate to ten mills per dollar. Additionally, the constitution empowered the state to raise a tax not to exceed one

mill per dollar on all property subject to taxation "to be applied exclusively to the maintenance and repairs of levees" (Article 213).

Then the constitutional convention took the unusual position in Article 215 of stating that Articles 213 and 214 "shall cease to have effect whenever the Federal government shall assume permanent control and provide the ways and means for the maintenance of levees in this State." Article 215 furthermore "authorized" the federal government "to make such geological, topographical, hydrographical and hydrometrical surveys and investigations within the State as may be necessary to carry into effect the act of Congress to provide for the appointment of a Mississippi River Commission for the improvement of said river...."⁶² The statement seemed out of place in a state constitution. Neither Congress nor the courts would likely have thought such an authorization necessary considering the importance of the Mississippi to national commerce. Moreover, state constitutions rarely address relations with a specific federal commission or "authorize" the federal government to do anything. In any case, as the years passed, it became increasingly apparent that Congress would not accept the burden of levee construction and maintenance that Louisiana enthusiastically offered to the nation.

The 1879 Louisiana constitution created a strong governor's office and a weak legislature, but decentralized levee management. Levee districts, usually based on a mixture of drainage patterns and parish boundaries but rarely encompassing entire subdrainage basins, became the centers of levee management. If Louisiana had elected strong governors willing to make full use of their powers, some sort of overall state plan for levee development might have resulted. But the Southern Bourbon governors of the late nineteenth century were generally weak and dominated by special interests. Also, the constitution forbade the legislature from contracting any debt or issuing any bonds "except for the purpose of repelling invasion or for the suppression of insurrection." Consequently, no major public works program could be initiated except by amending the constitution—admittedly, a relatively simple process that bloated the constitution with hundreds of trivial, special-interest amendments. The combination of weak governors, fragmented levee management, and constitutional constraints prevented good statewide levee planning.⁶³

For its part, the Mississippi River Commission, or MRC as it came to be popularly called, began its work quickly. By February 1880, members had agreed that levees needed to be constructed and the Mississippi's channel improved. Those items were easy to decide, and they embraced the approach advocated by Humphreys and Abbot. However,

the commission's deliberations went further. Under the influence of its most illustrious member, James B. Eads, the commission concluded that the Mississippi's channel should be confined to a 3,000-foot width all the way from Cairo, Illinois, to the river's mouth to scour out bars and secure a greater navigation depth. The plan implied that Eads' success with jetties at the mouth of the Mississippi could be reproduced farther up the river. A constricted channel would increase the current velocity, thereby deepening the channel in accordance with hydraulic theory and enabling it to carry more water.

To constrict the river, revetment, generally willow mattresses, would be placed on one bank and a "permeable dike" would be constructed on the other. These dikes would consist of rows of poles driven into the river's bed. Workers would then weave brush through the poles as though making a straw basket. As the water passed through the brush, its velocity would decline and it would drop its sediment behind the dike, thereby eventually creating a new bank farther into the river.⁶⁴

The MRC implemented plans as quickly as it had formulated them. By 1881, it had amassed 30 pile drivers, 78 barges to transport brush and stone, 2 large quarterboats, 5 towboats, and 2 steam launches. Despite this impressive assortment of equipment and the obvious commitment of its members, the commission's initial work focused only on channel improvement and bank revetment. Levee construction was not authorized because many in Congress still opposed federal involvement in flood protection. This changed in 1882, when a devastating flood—resulting in 284 crevasses totaling 56 miles in length—finally convinced Congress to authorize the MRC to repair and build levees. Passed over a presidential veto, the act stated that such levees would be built only to "afford ease and safety to the navigation and commerce of the river"; neither flood control nor flood relief were mentioned. The legislation directed the Secretary of War, acting through the Corps of Engineers, to aid the MRC by overseeing expenditures and, whenever the government benefitted, using private contractors rather than hired labor. The practical result was that, while the MRC initiated plans, the Chief of Engineers implemented them.⁶⁵

The commission's expanding responsibilities and closer coordination with the Corps of Engineers required a more sophisticated organization. At the suggestion of Secretary of War Robert T. Lincoln, the MRC organized its administration into four districts, each headed by an Army engineer officer who would report to the commission on all matters dealing with the lower Mississippi River. The Fourth

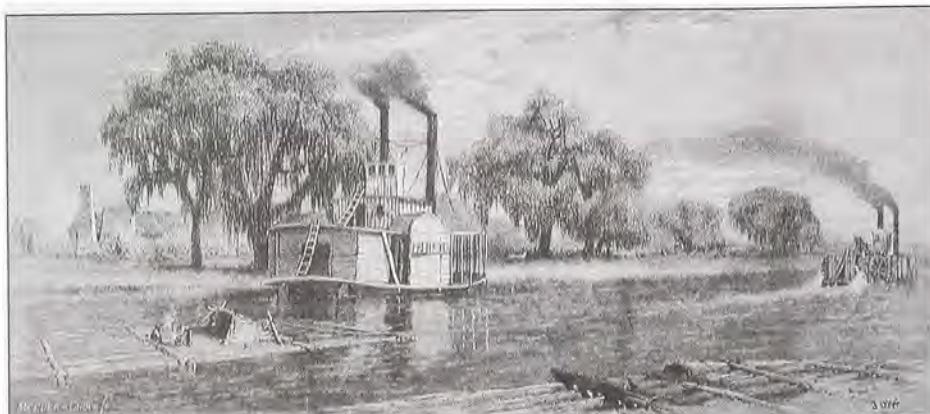
District, headquartered in New Orleans, had responsibility for the Atchafalaya Basin.⁶⁶

Commerce and Transportation in the Atchafalaya Basin

THE MISSISSIPPI RIVER COMMISSION WORKED to eliminate obstacles to navigation and to reduce the impacts of floods on life and property. Both were problems in the Atchafalaya Basin. In the immediate post-Civil War period, the basin depended on waterborne commerce since its road system was so poor. In fact, the Iberia Parish police jury became so frustrated that in 1877 it ordered all male residents to work on parish roads 12 days a year. Parish newspapers constantly warned of losing business because of the poor roads, and they carried stories of distraught travelers who turned back for fear of being stuck in the mud.⁶⁷

Steamers became the preferred means of travel. Mail steamers of the Attakapas Mail Transportation Company made daily runs from Brashear City to New Iberia and intermediate towns. Steamers also made frequent trips to Avery's Salt Mine, on Petit Anse Bayou (now Avery Island). Occasionally, a steamer journeyed from St. Martinville to New Orleans, via the Atchafalaya River, Old River, and the Mississippi. From Washington in St. Landry Parish, steamers left twice a week for New Orleans via Bayou Courtaleau, the Atchafalaya, Old River, and the Mississippi. Smaller vessels connected many small sites within the basin, especially saw mills.⁶⁸

The emerging lumber business stimulated the construction of new transportation facilities. Begun before the Civil War in "swamplands" sold to lumbermen, the business boomed after Congress passed the Timber Act of 1876. Supported by a sympathetic General Land Office, and southern politicians, the legislation opened up vast tracts of cypress swamplands in Louisiana to timber interests. For 25 or 50 cents per acre, lumber companies and individuals bought some of the best cypress lands in the United States. By 1880, hired men, called "swampers" in Louisiana, were methodically eliminating the Atchafalaya cypress and clogging the basin's rivers and bayous with logs destined for the saw mills.⁶⁹ Within two decades, Louisiana cypress accounted for more than half of all the cypress harvested in the United States, and most of this came from the Atchafalaya Basin.⁷⁰



Steamboat and rafts on the Bayou Teche.

"If a pirogue had to float on a dew, a bayou steamer had to move on the equivalent of a light rain."

Harnett T. Kane, *The Bayous of Louisiana*, p. 161.

The expanding lumber business attracted Charles Morgan. After the Civil War, his Southern Steamship Company had resumed steamship service between Galveston and Brashear City that it had begun in 1857. In 1869, he had assumed control over the New Orleans, Opelousas, and Great Western Railroad, which once again linked Berwick Bay and New Orleans. Morgan's combination of steamship and railroad companies became the principal connection between Texas and the rest of the South. In 1877, as the cypress trees fell in ever increasing numbers, Morgan consolidated his interests into the Louisiana and Texas Railroad and Steamship Company and ran 14 ships between the newly named Morgan City and various Texas ports. His company also owned four ships that plied the route between New Orleans and New York.⁷¹

However, shipping lumber, sugar, and rice created demands for bigger and better channels in the Atchafalaya Basin. In the early 1870s, Morgan's railroad and steamship company had dredged a channel 100 feet wide, 12 feet deep, and 12.5 miles long through the Atchafalaya Bay, but the channel was not properly maintained and it deteriorated. The situation was not to be rectified until shortly after the turn of the century. In 1906, some of the leading lumbermen, sugar planters, and community leaders in the region organized an Atchafalaya Bay Ship Channel Company. Through its own property, the company opened a toll passage in October 1907, 125 feet wide, 14 feet deep, and 11.5 miles long. However, this channel, too, proved unsatisfactory, and the 1910 Rivers and Harbors Act authorized the Corps of Engineers to construct a new channel 240 feet wide and 20 feet deep. Completed in 1911, the channel began deteriorating after a three-year maintenance

period had ended. America's entrance into World War I, followed by a general decline in Atchafalaya Basin shipping activities in the early 1920s, halted further improvement work.⁷²

Though riddled with the corruption characteristic of Reconstruction politics, Louisiana's efforts to rebuild its levee system and establish flood control throughout the state after the Civil War met limited success. In 1880 the levees were still below conditions in antebellum Louisiana, and the bankrupt state appeared unable to assist riparian landowners in any substantial way. However, the state benefitted from growing federal interest in improving navigation on the Mississippi as commerce increased and southern states began to be accepted back into the Union. The establishment of the Mississippi River Commission signified federal willingness to accept some responsibility for developing and implementing a plan to stop Mississippi River floods, though not as much as Louisiana politicians desired. The effect of this plan on the Atchafalaya Basin depended principally on whether the Atchafalaya River would be used as an outlet for Mississippi floodwater or be completely separated from the Mississippi. For nearly 50 years, engineers, politicians, and private citizens explored the issue. No other topic concerning the lower Mississippi was more important or elicited more passion. The controversy was not finally resolved until the 1950s. By then, the basin had been transformed forever.

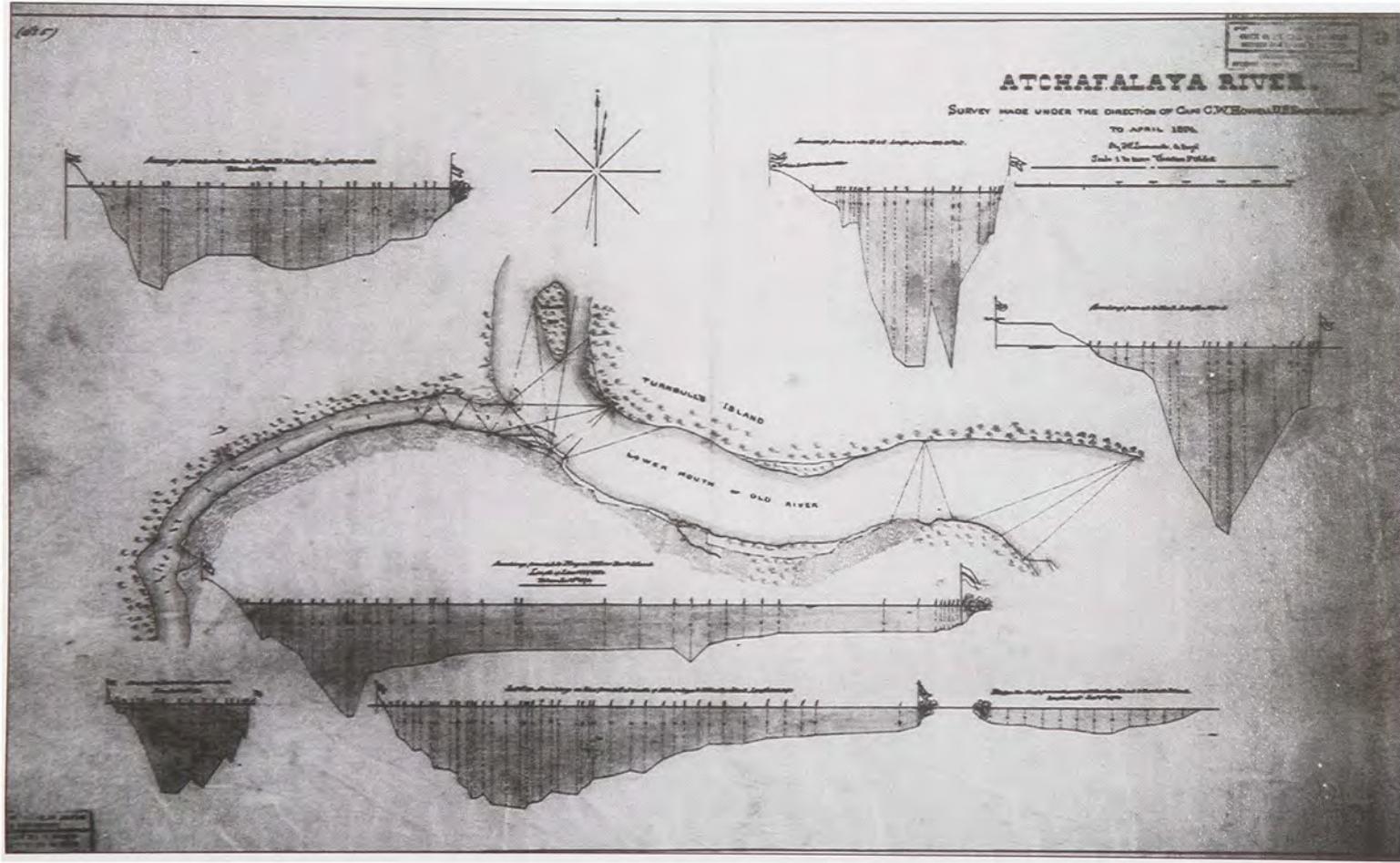
Chapter 3

The Outlet Question

OFTEN THE SIMPLEST QUESTION provokes the most complicated answer: should engineers disperse flood waters or confine them? As cities rose along the Mississippi River, as farms were developed and forests cleared, the question increasingly took on emotional overtones. In Louisiana, riparian landowners and merchants who depended on river transportation sought protection from floodwater that may have originated in places as unknown to them as the mountains of Nepal or the snows of the Yukon. The waters came from the Powder and Yellowstone rivers in Montana, the Allegheny and Monongahela rivers in Pennsylvania, the Chippewa in Wisconsin and the Platte in Colorado, from streams in 31 states and a bit of Canada. At the bottom of this vast drainage funnel lies Louisiana. No wonder that Louisiana residents sought levee protection and believed that federal assistance was not only necessary but justified for levee construction. Others, however, thought any plan relying solely on levees foolhardy and perilous.

While the Mississippi River Commission threw its support behind channel constriction, the commission's consensus fragmented over plans to reduce outlets. Some members argued that channel constriction required the closing of all outlets, while others feared that closing outlets would adversely affect flood control and navigation on the Mississippi's tributaries. Members unsuccessfully attempted to reconcile competing engineering theories, thereby ensuring an inconsistent policy. Those who would turn the Mississippi River into a water pipe—closing outlets—to provide flood protection and improve navigation along the main stem of the river faced opposition from residents along the tributaries and at the bottom of the pipe, including powerful New Orleans interests. Moreover, severing connections with the Mississippi's tributaries threatened waterborne commerce or, at the very least, implied an expensive program of lock construction.

For good reasons, the outlet debate focused on the Atchafalaya River and its connection with the Mississippi, Old River. The Atchafalaya River was the largest distributary of the Mississippi, an important water link to the West, and subject to periodic floodwater coming



Junction of the Atchafalaya and Old rivers, 1854.

from the Mississippi and Red rivers. Engineers tinkering with its hydraulics needed to balance competing claims for protection from property owners and commercial entrepreneurs. As often happens in such cases, economics and ideology eventually influenced the discussion as much as or more than engineering judgment.

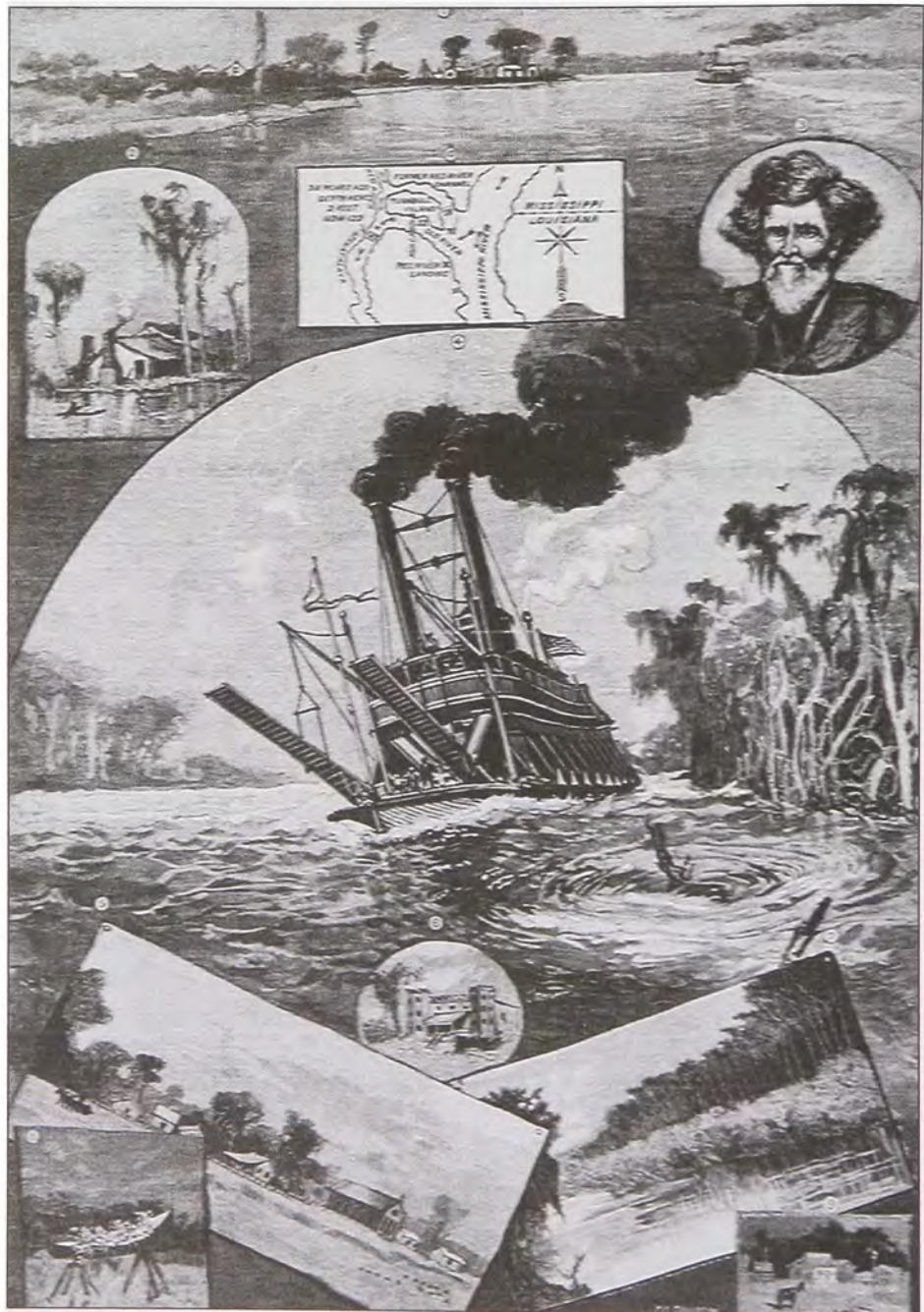
The Mississippi River Commission and the Outlet Question

BY THE END OF THE CIVIL WAR, conditions on Old River had deteriorated considerably. Ever since Shreve had made his cutoff in 1831, the Red River had discharged into the Mississippi through the arm of Old River north of Turnbull Island. However, after the removal of the Atchafalaya raft around 1860, increasing volumes of Red River water flowed into the Atchafalaya. By 1873, the Atchafalaya had become the primary carrier of Red River water, and the Old River northern channel closed entirely during low water.¹ Silt in the arm south of the island prevented water from easily passing between the Mississippi and the Atchafalaya rivers except during floods.

Through this heavily silted lower channel, the Red River's "surplus discharge"—the volume in excess of the Atchafalaya's carrying capacity—flowed into the Mississippi. The regimen increased the siltation problem as the Red and Mississippi rivers took turns dumping sediment into the lower channel. By 1876, the channel was all but severed. Only 100 feet wide and 20 inches deep, the channel threatened navigation between the Mississippi and the Red and Atchafalaya rivers.² Meanwhile, the Atchafalaya enlarged as more Red River water flowed into it.

To try to keep the lower channel open, Louisiana dredged the sandbars, but other sandbars formed, each year coming closer to the mouth of the Atchafalaya. The Mississippi was, in fact, forming a delta on lower Old River. The Army Corps of Engineers also sent dredges to Old River. During the low water season of 1880, for example, the dredge *Lone Star* steamed back and forth through the obstructions five to ten times per day, stirring up the material for the current to carry off. While crude, the work successfully kept the channel open. Toward the end of the season, only a couple of trips were necessary per day.³

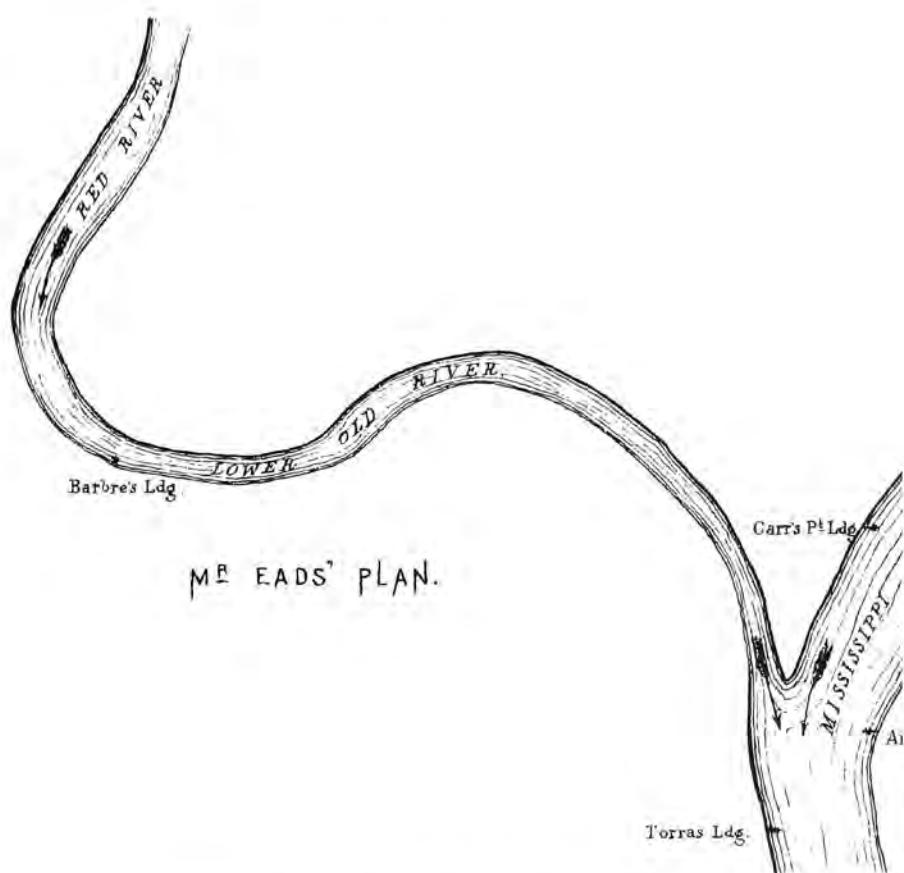
Two members of the MRC, Major Charles R. Suter and B. M. Harrod, a former Louisiana State Engineer, insisted that the Atchafalaya would continue to enlarge, and, since "no natural limit to



The Atchafalaya as seen in 1883: ① entrance to Atchafalaya River, ② swamper's house, ③ swamper, ④ steamer running the rapids of the Atchafalaya, ⑤ Red River landing, ⑥ castle on the Atchafalaya, ⑦ Little Whiskey Bayou, ⑧ swamper's garden (in the canoe), ⑨ the Ash cabin, ⑩ map showing changes in the Mississippi current.

Drawn by J. O. Davidson for Harper's Weekly (1883).

its enlargement can be assumed," that the Atchafalaya could easily carry the discharge of the Red River and its tributaries.⁴ What geology favored, they encouraged. Let the Red and the Atchafalaya rivers form one continuous stream, Suter and Harrod advised, and reduce or eliminate the flow of the Mississippi into the Atchafalaya River. Not only would these measures reclaim land along the Atchafalaya, Red, and smaller neighboring streams and bayous, the two commissioners suggested, but they would reduce serious floods resulting from Red River high water entering the Mississippi.⁵



Eads' plan for dealing with the Old River problem in the 1880s.

Had the MRC's area of responsibility been confined to the region around Old River, its deliberations would have been less agonizing. If New Orleans could be forgotten, if commerce could be ignored, then the problem of dealing with flooding in the Atchafalaya Basin and lands to the north could have been more easily resolved. This, of course, was

not the case. Despite the report of Harrod and Suter and a general consensus on closing outlets, the MRC refused to sever the Atchafalaya from the Mississippi. Doing so, members believed, would force the Mississippi to carry more floodwater past New Orleans; the Atchafalaya River could no longer serve as a natural emergency outlet. Also, the permanent separation of the Atchafalaya from the Mississippi threatened waterborne commerce. The commission's reticence annoyed Eads, who insisted on filing a minority report in 1882, when he accused the commission of not sufficiently emphasizing the necessity of closing all outlets along the river, including the Atchafalaya, and immediately repairing the levees. Once outlets were plugged, Eads believed, the Mississippi's scour action would eventually carve a channel deep enough to render levees unnecessary. Good in theory, but without much empirical verification, Eads' proposal failed to obtain a majority of votes within the commission.⁶

In April 1883, Eads left the commission. His poor health and his involvement in private business matters prevented him from fully participating in the meetings. Having reluctantly accepted the position in the first place, he felt it better under the circumstances to resign. Nevertheless, he continued to argue forcefully for closing the Atchafalaya. The dispute between him and other commission members piqued public interest after several southern newspapers, principally the *New Orleans Picayune*, published letters on the subject.⁷

Southern politicians brought the dispute to the floor of Congress, where concern continued over obstructions to commerce on the Mississippi. In the 1882 Rivers and Harbors Act, Congress appropriated \$4.1 million for the improvement of various harbors along the Mississippi, the "rectification" of the Red and Atchafalaya rivers where they joined Old River (no specific guidance offered), and the construction of a lock at the mouth of Bayou Plaquemine.⁸ The commission gathered data and directed John Evens, a civil engineer, to investigate and prepare a report on the Atchafalaya River as far south as Butte La Rose. Evens journeyed to the Old River area in December 1882.

Because the Mississippi's discharge into the Atchafalaya was so much smaller than the Red River's, Evens thought the probability "very small" that the Mississippi would alter course and entirely turn into the Atchafalaya Basin, even during a flood. Seeing the sandbars and sediment deposits along the lower channel, he reasonably concluded that the channel would naturally close "if left to the natural action of the water." He thought the Atchafalaya a "very crooked" stream with rapid erosion at many of the bends. Consequently, he predicted that natural cutoffs would continue. Finally, after describing the intensive

cultivation along the upper channel and the "primeval" appearance of the river farther on, Evens correctly concluded that the "richness of the soil is due largely to the effect of overflow."⁹

Evens found two regular steamer lines serving the Atchafalaya Basin. One company sent boats down the Atchafalaya and on to Bayou Teche, where it did most of its business. The other operated steamers between the town of Washington on Bayou Courtaleau and the head of the Atchafalaya, near Simmesport. Both companies also ran a profitable timber business. They bought timber—principally ash—at \$1.75 a cord in the Atchafalaya Basin and sold the cords at \$5.00 each in New Orleans. A third company, the Grand Lake Coal Company, used the river extensively during high water to tow coal barges.¹⁰

The continued use of the Atchafalaya River surprised some planters and merchants, who had supposed that trains and steamships would transport freight through Morgan City and that commercial agents would abandon the hazardous cross-basin route. However, the timber business stimulated commerce in the middle and upper parts of the basin. To replace the heavily silted Old River as a transportation link, Congress authorized reopening the connection between Bayou Plaquemine and the Mississippi (closed by the Iberville Parish policy jury in 1867) through the construction of a lock.¹¹

Evens predicted that the Plaquemine entrance "would no doubt be the means of building up the now abandoned portion of this fertile valley and benefit the settled portion [above Churchville] as well." His conclusion reflected a vision and a language long since lost in engineering reports. Once the Plaquemine entrance was in use, he saw the whole Atchafalaya region quickly being as "thickly peopled" as along the lower Mississippi River: "...the future of this beautiful and fertile valley can be naught but a brilliant one. Its forests are teeming with rich woods, while its soil from the years of recuperation is golden; it is indeed safe to predict that this beautiful valley will in the near future become the garden spot of the South."¹²

Later in 1883, Major Amos Stickney of the Fourth District engineer office in New Orleans, sent in a final report to the MRC in response to the congressional desire to rectify the Atchafalaya River and the mouth of the Red River. An exceptionally able Army engineer (Stickney later served as president of both the Missouri and Mississippi River Commissions), his report was predictably thorough. Far less certain than Evens that the Mississippi and the Atchafalaya would remain separate, the major agreed with earlier reports that the water between the Atchafalaya and the Mississippi passed in both directions depending

on relative high water stages. He also noted the quantity of sediment that settled on both sides of, and occasionally on, Turnbull Island.¹³

The major understood the irony of the situation. Plantation owners who had removed the Atchafalaya raft to facilitate transportation were now suffering from their own actions. Rid of obstructions and enlarged, the river carried increasing amounts of floodwater from both the Red and Mississippi rivers, and the Atchafalaya's flood stage grew ever higher. Riparian planters built small levees, then larger and larger ones. At last, they gave up in despair. According to Stickney, plantations beyond 30 miles down on the west bank and 21 miles down on the east bank were abandoned.¹⁴

What to do? Stickney examined six proposals and rejected all of them. The plans ranged from turning the waters of the Red into the Mississippi via either the upper or lower channels of Old River to making the Atchafalaya a continuation of the Red River. Two plans called for excavating a new cut from the Mississippi to the Red River a few miles above Old River. One modestly proposed leaving the rivers as they were and simply establishing a new transportation route via the yet to be built Plaquemine Lock.

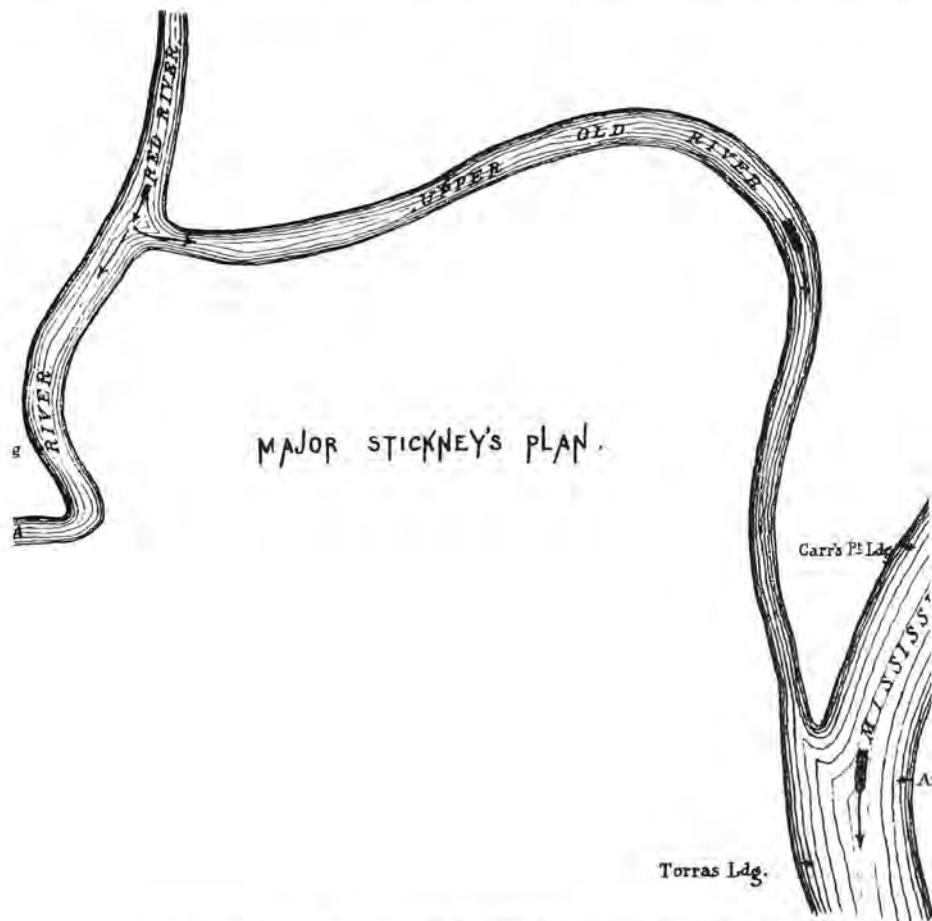
Stickney wished to divide the Red River at the head of Turnbull Island. One branch would be called Red River and would be transported through upper Old River to the Mississippi. The other branch would connect with the existing Atchafalaya River. To regulate the depth of the Atchafalaya River and ensure the proper slope, Stickney proposed submerged sill dams of brush and stone at intervals of one mile. The crests of these dams would be just below low water except in the center of the channel where they would be low enough to allow navigation at all stages. He suggested permeable dikes on the sides of the low water channels of both the Atchafalaya and upper Old River to help preserve the channels. He also envisioned using submerged brush sill dams across upper Old River to help regulate the depth. Lower Old River was to be closed gradually. It would be kept navigable until the other parts of the project had been completed.¹⁵

Major Stickney's report received a sympathetic hearing. MRC members had already concluded by 1883 that no amount of dredging would ever solve the problems at Old River. While they recommended to Congress that dredging be continued to provide access to the Red and Atchafalaya rivers from the Mississippi, it was to be a temporary expedient until a plan for permanent improvement had been adopted and implemented.¹⁶

The MRC confined its attention to Stickney's proposal dealing with sill dams and, with minor modifications, approved it and sent it to

Congress at the end of 1884. The revised plan called for six submerged brush and stone sill dams in the Atchafalaya River to prevent further enlargement. The upper one was to be just below Bayou des Glaises, close to Simmesport, and the five others were to be downstream at intervals not to exceed one-quarter of a mile. Each sill dam was to have a base width of 300 feet. With these structures in place, the commission hoped to permit a volume of flow down the Atchafalaya River equal to the Red River's flood discharge.

The commission refused to approve separating the Atchafalaya from the Mississippi River. Instead, it modestly suggested that Congress "judge of the advisability" of constructing a dam across Old River between the Red and the Atchafalaya to force the Red River to take the upper arm of Old River, "the natural and better channel," into the Mississippi, while the Mississippi would flow into the Atchafalaya through the lower arm of Old River.¹⁷ By separating the Red and the

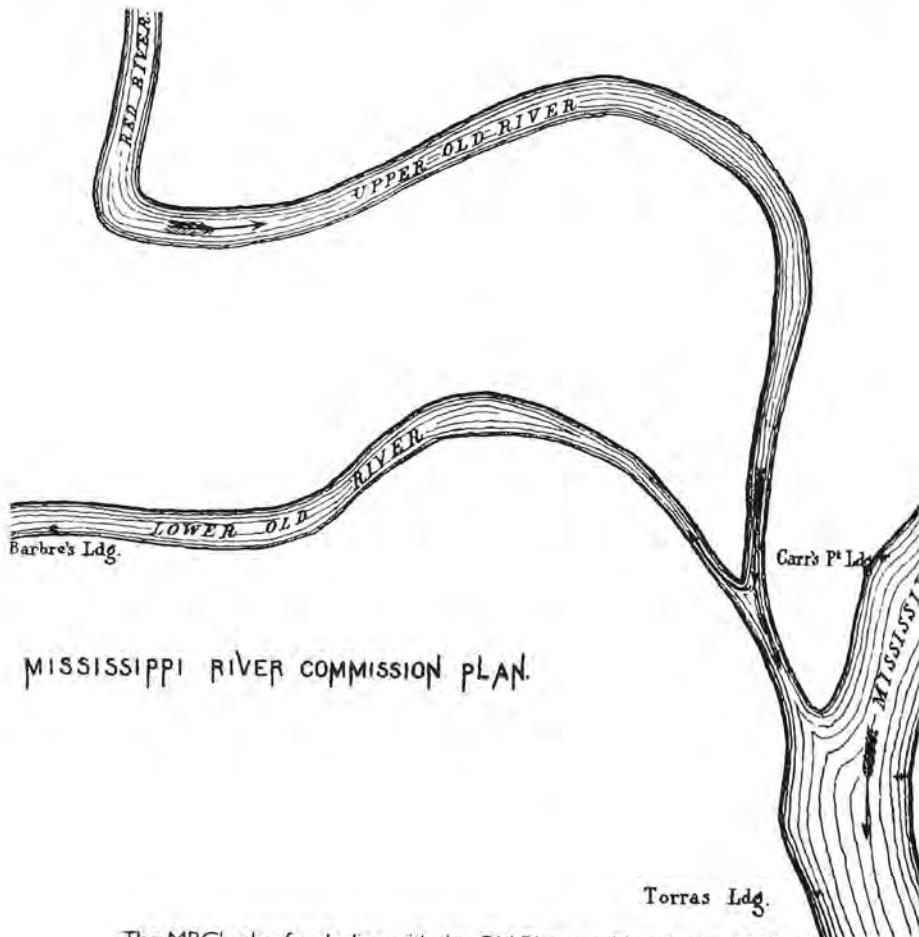


Stickney's plan for dealing with the Old River problem in the 1880s.

Atchafalaya rivers, the commission hoped that both rivers would be able to maintain their connections with the Mississippi, thus providing navigable passage during high water season as well as an outlet for overflow water that otherwise would threaten Baton Rouge and New Orleans.

The commission's recommendation was both an engineering and political compromise. At least partially conceding Eads' position, MRC members admitted that the flow of Mississippi water into the Atchafalaya seriously impaired the Mississippi's ability to carve a deeper channel farther south. Yet, the commission refused to separate the Atchafalaya and Mississippi rivers. Any such separation would also force additional Red River water into the Mississippi, threatening more devastating floods and raising cries to increase levee heights.¹⁸

The Red River levees were also suspect. Although most commission members thought these levees essential to ensure navigation from the



The MRC's plan for dealing with the Old River problem in the 1880s.

Red to the Mississippi, Brevet Brigadier General Cyrus B. Comstock of the commission expressed reservations. He pointed out that the levees allowed higher flood stages; should they fail, the consequences would be more disastrous than if they had never been constructed. He also doubted that the dam across the Old River would work and concluded that continual annual dredging was the only way to ensure the connection between the Red and the Mississippi.¹⁹

Leaving it to the Mississippi River Commission to determine priorities, on 5 August 1886, Congress appropriated \$187,500 for work on the Red and the Atchafalaya rivers. A little over two weeks later commission members met to establish a definite plan. They decided to set aside \$15,000 to maintain navigation through Old River during the low water season of 1887. The rest was to be used to purchase necessary equipment and to build one sill dam. After some further studies, the commission agreed with Captain Dan C. Kingman, the new Fourth District engineer officer, that the first sill dam should be built 500 feet below the mouth of Bayou des Glaises.

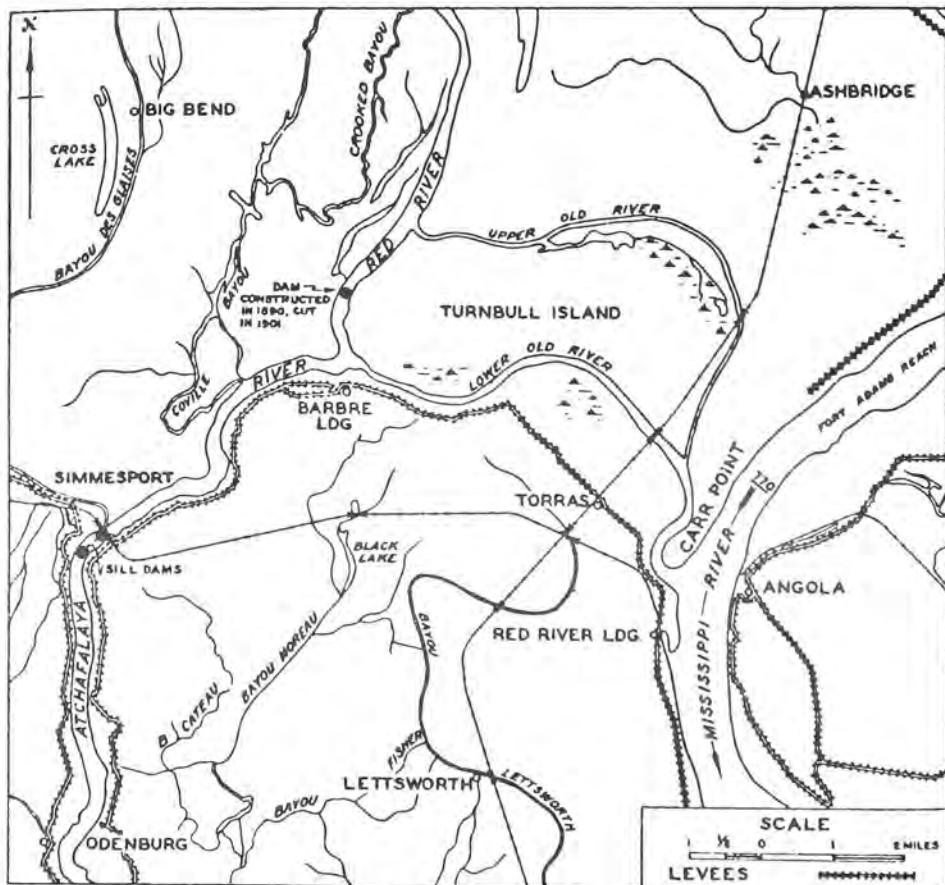
Fresh from supervising over three years of road construction in Yellowstone National Park, Kingman probably suffered a bit from the change of climate and topography. Nevertheless, he lost no time in beginning construction. By the end of 1887, Sill Dam No. 1 had been completed except for some minor work. The dam was composed of mattresses made of willow brush and ballasted with rock. Each mattress was three feet thick, twice the normal thickness, and lapped five feet over the one beneath it.²⁰

The work was laborious. Although the civilian assistant engineer at the project site thought the health of his crew was generally good, he noted that eight men died from pneumonia, four on the work site and four more just after leaving work. He blamed the pneumonia on the "impure whisky" the men drank followed by their sleeping on the ground all night. The liquor traffic, he complained, "was a source of great annoyance." However, he also noted the "impurities" in the Atchafalaya water which caused sores. More than that, "whenever the men drank from the Atchafalaya they were usually attacked with fever within a few days afterwards."²¹

Using part of the \$250,000 appropriated in the 1888 Rivers and Harbors Act, the commission authorized the construction of a second sill dam, Sill Dam No. 3. In 1888 Stickney had suggested that the odd-numbered sill dams be constructed first; the even-numbered would then be built only if found necessary. Begun on 26 November 1888, and completed on 27 August of the following year, Sill Dam No. 3 was located 1,750 feet downstream from the lower edge of Sill Dam No. 1,

which it resembled in most respects. According to the assistant engineer, new quarterboats considerably reduced the sickness of the work force; he reported no deaths. Since the two sill dams appeared to prevent further enlargement of the Atchafalaya, in the 1890s the MRC decided not to build the four others. With some minor modifications and maintenance, both sill dams served well into the 1920s.²²

The same cannot be said of the Old River Dam (sometimes called the Red River Dam) which the MRC had proposed in 1884. Five years later, after completion of Sill Dam No. 3, the commission decided to proceed with this dam's construction. The dam would extend westward from the west side of Turnbull Island, between the head of the Atchafalaya and the mouth of Red River, to the opposite shore and would separate the two rivers except at high water stages. More of the Red River's flow would go into upper Old River, north of Turnbull Island, and help excavate an improved navigation channel. To



Map of the Old River area in the early twentieth century. Note the sill dams by Simmesport. The Red River dam became a navigation hazard and was finally removed by explosives.

accelerate this scouring process, MRC dredges were put to work. However, they were not powerful enough to affect matters significantly, and the MRC suspended dredging operations in 1891. By that time, Army engineers had built the dam to a height some one foot to three feet below low water.

At that point dam construction ceased. Unable to assure a navigation channel between the Red and Mississippi rivers north of Turnbull Island, the commission dared not build the dam higher west of the island as originally intended. Doing so risked disrupting commerce between the Red and Atchafalaya rivers and causing substantial economic hardship. Indeed, to ensure that the dam would not impede water transportation, part of it was removed in 1892.

The following year, the MRC dispatched a new hydraulic cutter-head dredge, the *Ram*, to Old River, and this machinery kept the lower arm of Old River open for the next three years. With the surprising success of the hydraulic dredge, most commission members lost interest in the dam, which began to deteriorate badly. Satisfied that the sill dams and periodic dredging could resolve the problems at Old River and faced with inadequate funding to do more work in any case, the commission decided in 1896 to go no further with the project except for occasional dredging.²³



This photograph from a broken glass plate negative shows the *Ram*, a self-propelled, cutterhead dredge, working in Bayou La Rompe in the Atchafalaya Basin in 1933. Constructed in 1893 for work on Old River, the *Ram* operated on many streams in the lower Mississippi basin. It was retired soon after this photograph was taken.

So long as the Mississippi River Commission's work appeared to offer prospects of success, most politicians—particularly at the federal level—bowed to the opinions of the engineers and allowed the commission to proceed with its plans. However, whenever high water

threatened the levees, the controversy over outlets erupted with new force. One such occasion occurred in 1890, when extensive downpours in the Ohio Basin and along the middle Mississippi caused intermittent flooding from January until late spring. The devastation included 53 levee crevasses on the lower Mississippi totaling 6.8 miles in length. Significantly, none of the floodwater came from the Missouri, Arkansas, or Red rivers; and the Mississippi River above Cairo remained at a relatively low stage.²⁴

Responding to this disaster, the Senate Committee on Commerce conducted hearings on the improvement of the Mississippi River in May 1890. Mississippi River Commission members, private engineers, and state and local officials testified. Outlets attracted much attention. General Comstock, then president of the Mississippi River Commission, advocated that the Atchafalaya be maintained as an outlet of the Mississippi, with the capacity to take 500,000 to 600,000 cfs from the Mississippi and Red rivers. Comstock calculated that this volume could be taken without impairing navigation on the Mississippi below the mouth of Red River.²⁵ Lieutenant Colonel Suter, also a commission member, strongly disagreed, as the following exchange makes clear:

Senator Washburn: According to your theory it would be desirable to close the Atchafalaya outlet, would it not?

Lieutenant Colonel Suter: As an outlet, yes. That is to prevent the Mississippi from going into it.

Senator Washburn: That would raise the water above it.

Lieutenant Colonel Suter: I do not think it would do so permanently, although that would probably be the first effect.

Senator Washburn: I understood General Comstock to state that he thought it was well to maintain the Atchafalaya outlet.

Lieutenant Colonel Suter: That is his opinion, not mine.²⁶

Colonel Suter and General Comstock also disagreed on the importance of levees. Comstock stressed dredging and contraction works (permeable dikes) for river improvement. Suter insisted on the primacy of levees, and he received complete support from Captain Smith S. Leach, formerly secretary of the MRC and in 1890 the engineer in charge of the First and Second Districts.²⁷ Captain Kingman preferred levees to outlets for flood control and navigation.²⁸

Suter and his supporters carried the day with Congress. Mississippi Representative T. C. Catchings vehemently attacked the outlet scheme

in an address before the House on 22 May 1890. Indirectly assailing Comstock's competence, Catchings told his colleagues that the outlet method has been "unanimously condemned by all engineers of note in this country" and proceeded to list a dozen or so engineers who supported the levees policy—everyone from Humphreys and Abbot to private engineers such as Clemens Herschel. He devoted much of his speech to attacking a proposal to cut a channel from the Mississippi River to Lake Borgne and hence into the Gulf of Mexico. First suggested by Ellet and passionately advocated by New Orleans engineer John Cowdon in the early 1880s, the proposal had been much discussed at earlier hearings. No one, including Comstock, had favored it, fearing that the new channel would increase shoaling and impair navigation, but Catchings verbally flayed it nonetheless.²⁹



Prisoners use wheelbarrows to construct a levee in 1890 to close the Morganza Crevasse about 25 miles below Old River.

Congress did not press the MRC to change its plans. However, the floods of 1890 showed the inadequacy of the existing levee system even if the damage appeared minor compared to that of 1882. Higher and wider levees were needed, and the MRC changed levee dimensions accordingly.³⁰

Floods in 1892 and 1893 provoked further discussion on outlets. Captain John Millis, who had succeeded Kingman in New Orleans, and Captain Curtis McDonald Townsend, in charge of the Third District in Memphis, advocated temporary outlets to relieve flood waters. Congressional committees once more debated the Lake Borgne outlet project, as did many Louisianians who were deeply divided on the subject. Opposing resolutions introduced into the Louisiana legislature

advocated outlets on one hand, the levee system on the other. The House Committee on Lands and Levees reported out favorably the resolution favoring levees, but the legislature refused to adopt either one. The debate continued elsewhere. An “Outlet Convention” met in Natchez, and a convention of Arkansas, Mississippi, and Louisiana levee commissioners met in Baton Rouge to protest even the slightest lessening of support for main stem levee construction. Led by engineers and politicians firmly committed to their positions, the two sides talked much, but accomplished little.³¹

Not politics, but new technology enabled the Mississippi River Commission to revise its plans. Experiments at Old River and elsewhere in the mid-1890s conclusively proved the value of hydraulic dredges. By 1898, the MRC had built four such dredges and had two under construction.³² But the success divided commission members. A majority formally decided in 1896 that dredging cleared channels more efficiently than did contraction works. Moreover, dredging was cheaper. Although permeable dikes had worked quite successfully in early MRC experiments, placing them at all the locations necessary to secure permanent improvement would be very costly—prohibitively so, in light of declining federal river and harbor appropriations. To the majority, then, advances in dredging seemed both technically and politically advantageous. In strong opposition, Colonel George L. Gillespie, the commission president, and Lieutenant Colonel Stickney argued that permanent river improvement required the contraction works. Stickney wrote a minority report expressing his position. Members did agree on one thing: they should proceed with revetment work to reduce bank caving and erosion.³³

The decision to abandon the dam across Old River reflected the MRC’s general reorientation. In light of funding constraints and the difficulties encountered in building the Old River Dam, the decision possessed undeniable logic. Somewhat more surprising, engineers complacently expressed their faith in the ability of the two sill dams to prevent further enlargement of the Atchafalaya. Both MRC Commissioner Harrod and his successor as state engineer, Henry B. Richardson, thought that the sill dams could adequately control the Atchafalaya at its mouth and prevent the Mississippi from breaking into the Atchafalaya.³⁴ Engineers working for the commission generally agreed that minor modifications of the two sill dams would suffice to prevent the Atchafalaya’s enlargement. In 1901, Army engineers widened the upper sill dam to 560 feet and the lower one to 440 feet. Two years later, the lower sill dam was also widened to 560 feet.³⁵

Meanwhile, the Atchafalaya Basin Levee District, established in 1890, aggressively constructed levees using funds raised through taxes as well as contributed by the state. The district and the MRC split the work along the Mississippi River. The commission constructed levees between Barbre's Landing and Port Allen, the district between Port Allen and Donaldsonville. The district also built and improved levees along Bayou Lafourche from Donaldsonville to about six miles below Lockport and did a substantial amount of work along the Atchafalaya River. By 1900, the district's fortifications against natural disaster included 233 miles of levees: 128 on the Mississippi, 30 on the Atchafalaya, and 75 on Bayou Lafourche. On the Atchafalaya, the levee grade exceeded the 1897 floodwater stage by three feet.³⁶ By 1916, the district's levees stretched nearly 40 miles along the west bank of the Atchafalaya and about 46 miles along the east bank.³⁷

Once levees were constructed, engineers could not easily determine whether the sill dams or the levees were the major agent of change in the Atchafalaya's regimen. The Mississippi River Commission closely watched the Atchafalaya, particularly the river's upper reach, and it authorized surveys in 1895, 1904–1905, and 1910–1911. After evaluating the findings of the 1904–05 survey, commissioner John A. Ockerson, whose engineering work on the Mississippi dated back to 1879, described some of the unusual problems associated with the Atchafalaya in an address to the American Society of Civil Engineers. He noted the enlargement that had taken place since 1880, but thought that the sill dams had "effectually prevented further enlargement."³⁸ Perhaps of more interest to his audience because it suggested important modifications in hydraulic theory, Ockerson observed that the "doctrine of contraction" did not work on the Atchafalaya. Although hydraulic theory called for the channel to deepen where flow was constricted, at numerous locations on the Atchafalaya both the depth and the width had increased; in one section where the width was more than double that of the narrowest stretch, the depth was four times greater. Unlike most rivers, Ockerson concluded, on the Atchafalaya a narrow channel means less depth, not more, while "excessive width is invariably accompanied by great increase in depth."³⁹

Ockerson offered no explanation for these "great holes," although he thought that levee construction or the closing of distributary bayous may have contributed to the phenomenon. He noted that levees increased the carrying capacity of the river by confining to one channel waters that once flowed over the river's banks and through various outlet bayous. He thought there was "very little danger" of the Mississippi permanently flowing into the Atchafalaya—although it

would continue to do so during high water—because the levee construction along the main stem, as well as the increasing amount of sediment at the entrance to Old River, made this increasingly improbable.⁴⁰

Ockerson's paper sparked substantial controversy, even though Ockerson enjoyed high respect within the engineering profession—he was vice president of the American Society of Civil Engineers in 1907 and 1908 and president in 1912. Former Louisiana State Engineer Henry Richardson strongly disagreed, insisting that historically the Atchafalaya had flowed into the Mississippi during large floods, not vice versa. Consequently, it seemed unlikely that the Old River connection could effectively serve as a "safety valve" for Mississippi River water. Nor did he believe the Atchafalaya a particularly unusual stream. Rather, it typified any stream undergoing rapid enlargement. Such streams often had innumerable horizontal and vertical eddies which formed holes, enlarged some areas, and reduced others. Only the magnitude of the changes on the Atchafalaya was greater. Finally, Richardson favored permanently "divorcing" the Red and Atchafalaya rivers from the Mississippi.⁴¹

Others supported Richardson's opinion about the holes, although with slightly different explanations. T. G. Dabney, chief engineer for the Yazoo-Mississippi Delta Levee District in Mississippi, thought the phenomenon familiar to those conversant with overflow conditions in the Mississippi bottoms. It resulted from "scouring action induced by obstacles in the path of the flowing water, in consequence of vertical and lateral currents which are set up by obstructions, in a formation that yields readily to such destructive agencies."⁴² Frank M. Kerr, then the Louisiana state engineer, thought the Atchafalaya's characteristics not so uncommon in Louisiana, although they might be elsewhere in the country. He confidently announced that the holes on the bed of the Atchafalaya resulted from levees which confined flood waters "until they reached the ends of the levee, where, set free, with enormous local increase in slope, greatly increased velocities were created, and rapid whirls, eddies, counter and crosscurrents were developed."⁴³ Kerr advised that similar holes were to be found in the Red River.⁴⁴ L. J. E. Le Conte agreed that levees indirectly contributed to the unusual depths of the Atchafalaya's bed and suggested that conditions at the end of a levee line were similar to those at the lower end of a cutoff.⁴⁵

Engineering debates about the Atchafalaya River showed that many issues dealing with the geophysics of the stream were still unresolved. However, the questions mainly interested engineers, not politicians, until the question of divorcing the Atchafalaya from the Mississippi

once more became a major political issue in the lower Mississippi valley. This occurred in 1909, when the Corps of Engineers completed the construction of Plaquemine Lock and reestablished an old connection between the Atchafalaya and Mississippi rivers.

Navigation Interests and the Outlet Question

THE PLAQUEMINE LOCK HAD NOT been easy to build. The Mississippi River Commission began developing plans for the lock in 1882, and Congress authorized construction five years later. In the early 1890s, contractors for the Corps of Engineers completed preliminary excavation and dredging work. They also removed obstructions from Bayou Sorrel, Grand River, Pigeon Bayou, and Grand and Flat lakes. Lack of funds delayed actual lock construction until 1898, and contractual disagreements and the difficult work further extended the work schedule. However, once completed, the lock proved impressive, with five sets of gates and a lift of 55 feet, among the highest in the world at that time. Work on a protection levee and additional excavating continued into the following year.⁴⁶



Plaquemine Lock in 1947.

The completion of Plaquemine Lock killed one debate but enlivened another. The debate over the Louisiana route for an intracoastal canal ended. As early as 1875, Army engineer Major Charles W. Howell had proposed that an intracoastal canal be completed from Donaldsonville, where Bayou Lafourche entered the Mississippi River, to the Texas border. Howell suggested damming Bayou Lafourche and transferring cargo from Mississippi to Lafourche vessels via an inclined plane and turntable. From Bayou Lafourche, vessels would proceed to Lake Verret, Flat Lake, past Brashear (Morgan) City, and then on to Vermilion Bay, Calcasieu Lake, and Sabine Lake via one of several alternate routes. However, Congress doubted the cost-effectiveness of this project, and Howell's proposal received little further attention until 1905 when Congress authorized surveys in Louisiana and Texas for an intracoastal canal.⁴⁷ The year before, the Corps of Engineers had dammed the entrance to Bayou Lafourche at the behest of local interests, especially residents in the Lockport area who were in the unenviable position of either constantly raising levees and having the bayou dredged (assuming sufficient appropriations), or else enduring floods whose stages rose higher and higher as Mississippi River silt settled along the lower part of the bayou.

Major Edgar Jadwin oversaw the surveys. Years later, as Chief of Engineers, he decisively influenced flood control plans for the Mississippi River. Now, however, his work was more modest. Although local interests along Bayou Lafourche desired a lock to replace the dam, Jadwin recommended routing the Intracoastal Waterway to Plaquemine because of the lock then being built there. Jadwin's recommendation would more directly benefit Baton Rouge. Of more importance, it eliminated a potentially major bottleneck on the coastal system. Bayou Lafourche's depth confined vessels to no more than a five-foot draft, good enough for small flatboats, but not for the coastwise commercial steamers.

Nevertheless, like Howell's earlier proposal, Jadwin's report was not approved, and for much the same reason. The Board of Engineers for Rivers and Harbors (BERH), established by Congress in 1902, doubted the anticipated economic benefits of a waterway through Louisiana. Instead, the Board recommended building parts of it, as regional economies grew and projects could be more easily justified.⁴⁸ Congress did not authorize construction of the entire Louisiana and Texas Intracoastal Waterway until 1925.⁴⁹

The completion of Plaquemine Lock again raised the question of divorcing the Atchafalaya from the Mississippi. With a transportation

route between the Mississippi and the Atchafalaya-Red River system assured, a major objection to closing the gap at Old River disappeared. Long-time MRC member Robert Taylor testified before the Senate Committee on Commerce in March 1910, that the "demand for the divorce of the Red River from the Mississippi has become active and urgent."⁵⁰ He conceded that closing Old River could imperil downstream properties so long as Mississippi River levees were not high enough, but he maintained that the dam would reduce floodwater in the Atchafalaya Basin. He ignored the controversy over closing all outlets, including Old River, not to reduce flooding in the Atchafalaya Basin, but to carve a deeper channel in the Mississippi.⁵¹

In the 1910 Rivers and Harbor Act, Congress directed the MRC to make "an examination and report upon the necessity, urgency, and practicability of permanently separating the waters of the Red and Atchafalaya rivers from those of the Mississippi River, together with an estimate of the cost of such work."⁵² Even before this act was passed, the Mississippi River Commission had begun gathering information. It first ascertained the sympathies of those people whom the closure would most affect. The president of the commission formally requested the views of certain individuals and organizations, but many persons and organizations sent unsolicited opinions.

Most planters and landowners along the Atchafalaya—who had formed themselves into the Atchafalaya Basin Protective Organization to lobby for flood control measures—wanted Old River closed. The State Board of Engineers likewise favored closure, although it cautioned about doing it prematurely—before levees were up to grade along the Mississippi, especially around New Orleans. Except for Point Coupee Parish landowners, who feared increased flood heights on the Mississippi River, all the parishes and levee districts along the Red and Atchafalaya rivers supported closure, as did the Texas and Pacific Railroad Company, whose trains ran through the basin. Commission members Taylor and Harrod also supported the proposal. Advocates believed that closing Old River would improve Mississippi River navigation by reducing siltation at the Mississippi's juncture with Old River and would also help reclaim land along the Red and Atchafalaya rivers.⁵³

The principal cities along the lower Mississippi opposed closure. Joining them were the Louisiana state legislature, riparian land owners along the Mississippi, Point Coupee Parish, various navigation interests operating on the Red and Atchafalaya rivers, and the Louisiana Railway and Navigation Company, whose operations and equipment around the Old River juncture would be seriously impaired by the construction of

a dam. The arguments against closure included fears of the increased amount of water going down the Mississippi below Old River; the impairment of navigation on the Red, Atchafalaya, and other rivers; damages to the Louisiana Railroad and Navigation Company; anxiety over relying on one lock for navigation service; and concerns that closure would restrict the ability of navigation interests to compete with the railroads.⁵⁴

The commission submitted its report to the Chief of Engineers in November 1913. It concluded that closure was "practicable but not urgent; that it is necessary to ensure the reclamation of the Louisiana delta; that it will reduce the expenses of developing lands for agriculture in the interior of the basins [mainly, the Atchafalaya Basin], but by adding to the burdens of those localities which are situated on the main river." If Congress authorized the separation of the Red and Atchafalaya rivers from the Mississippi, the commission recommended a dam across Old River, along with connecting levees to the lower Tensas and Atchafalaya river systems, at a cost of \$1.5 million. To complement Plaquemine Lock and expedite waterborne commerce between the Red and Atchafalaya rivers and the upper Mississippi, the commission advocated a lock and a canal from the Mississippi to the Red River near Union Point, Louisiana, at a cost of \$4.3 million. Necessary enlargement of levees brought the total cost of the project to a little over \$13 million. However, commission members pointed out that the eventual separation of the Red and Atchafalaya rivers from the Mississippi would occur naturally if the dredging of Old River were abandoned.⁵⁵

The BERH greeted the commission's report less than enthusiastically. Board members thought the cost estimate too low since they believed the project might necessitate revetment work that would require additional funds. More significantly, the board disagreed that the project was necessary to reclaim Louisiana delta land. It argued that this reclamation could be executed without divorcing the rivers, although it admitted that the project would reduce costs of flood protection in the delta. Noting the commission's conclusion that the work was practicable, but not urgent, the board advised that the United States not undertake the project "at the present time" because the "interests threatened by the proposed work, including the city of New Orleans, are of greater importance than those to be benefitted thereby...."⁵⁶

Thus, Brigadier General and Chief of Engineers Dan C. Kingman faced reports implying some premature optimism on his part when he had supervised the construction of sill dams on the Atchafalaya 25 years before. Whatever his feelings on the matter, he apparently had no

misgivings about his recommendation to the Secretary of War. He completely supported the BERH and recommended against any project separating the Mississippi from the Red and the Atchafalaya.⁵⁷

The report disappointed Louisiana Senator Robert Broussard. When he had inserted into the 1910 Rivers and Harbors Act the authorization for the commission's investigation and report, he had gambled that the commission would emphatically support the separation of the Atchafalaya from the Mississippi. The commission's conclusion that no urgency existed surprised the senator. Still, the senator had to admit, even if the project had received the Corps' support, it was doubtful that Congress would have been willing to appropriate \$13 million to build it.⁵⁸

Floods and Outlets

SEVERE FLOODS IN 1912 AND 1913 increased pleas for flood relief in much of the lower Mississippi valley. Following the 1912 flood, Louisiana Senator Joseph E. Ransdell and Mississippi Congressman Benjamin C. Humphreys co-sponsored legislation allocating \$60 million of federal aid for the lower Mississippi. In 1915, Senator Broussard amended Nevada Senator Francis G. Newlands' controversial bill on the planning of federal water projects by requiring that not less than \$10 million be spent annually for ten years on Mississippi River flood



Main Street in Melville, Louisiana, during the 1912 flood in the Atchafalaya Basin.

control. The amendment further directed that the Atchafalaya River be considered part of any Mississippi River flood control project, and that some of the appropriations be used to build “controlling works” to regulate the amount of Mississippi water flowing into the Atchafalaya and for “bank protective works, cut-offs, and auxiliary flood-water channels necessary to control and prevent all overflows from said Atchafalaya River.”⁵⁹

Senator Newlands’ bill was one of the more persistent pieces of legislation in the Progressive era of American politics. Originally proposed in 1907, it provided for a permanent, presidentially appointed body to supervise and coordinate the construction of federal water projects and an Inland Waterway Fund of \$50 million to fund the projects.⁶⁰ Broussard’s amendment was but one of several proposed over the years to make Newlands’ legislation more palatable to both the executive branch and Congress. Several Louisiana and Mississippi legislators opposed Newlands’ plan because they feared its emphasis on multipurpose development (flood control, navigation, irrigation, water supply, and hydropower) might upset or postpone flood control plans for the Mississippi River. Finally, in March 1917, a compromise allowed passage of the first federal flood control act and, five months later, the incorporation of Newlands’ waterway commission plan into the 1917 Rivers and Harbors Act.⁶¹

The 1917 Flood Control Act established two important principles regarding flood control in the lower Mississippi basin. First, the federal government recognized an obligation to assist victims of flood-prone areas of the basin. Second, cost-sharing was institutionalized; for every two dollars the federal government spent on levee construction, local interests were required to spend one. Since local interests also provided the rights-of-way for the levee construction, their actual share of the cost amounted to about half. Moreover, they had to maintain the levees once construction was completed.

The 1917 act provided \$45 million for flood control on the Mississippi (and \$5.6 million for the Sacramento River), but not more than \$10 million annually. Congress appropriated the first \$6 million in June 1917. America’s entrance into World War I reduced appropriations the following year. Then the end of the war brought on inflation and invalidated earlier cost estimates that served as the basis for the 1917 act. In six years only about \$17 million in federal money had gone toward levee construction. In 1923, following a major flood the year before, Congress modified the 1917 act to authorize another \$60 million and that same year appropriated the first \$10 million.⁶²

Besides authorizing a substantial investment for flood control, the 1917 act required "a survey of the Atchafalaya Outlet so far as may be necessary to determine the cost of protecting its basin from the floodwater of the Mississippi either by its divorcement from the Mississippi River or by other means...."⁶³ This was a better formulation than the 1910 directive since it authorized the MRC to consider alternatives to separating the Atchafalaya from the Mississippi. Without this information, Congress would have difficulty choosing the most cost-efficient project.

Responding to the congressional direction, the Mississippi River Commission initiated another survey of the Atchafalaya and Old River. Its next report to the Chief of Engineers, 17 July 1919, marked a further retreat from promoting the separation of the Atchafalaya and the Mississippi rivers. The commission claimed that the 1917 Flood Control Act rendered closing Old River unnecessary. Instead, a system of cost-shared levees could protect the interior basins (Red and Atchafalaya). There would even be cost savings. The MRC calculated that, should Old River be closed for \$13 million, another \$3.75 million would still be needed for levees on the Atchafalaya and Red rivers, for a total of about \$16.75 million. However, were Old River left open, an adequate flood protection system in the interior basins could be obtained for a total of \$5.1 million.⁶⁴ Senator Ransdell quickly joined with Louisiana Congressman Riley J. Wilson in sponsoring legislation to implement the commission's proposal. Their bill authorized the expenditure of up to \$4 million from past and future flood control appropriations for the protection of the Atchafalaya, Red, and Black rivers.⁶⁵

The floods of 1911, 1912, and 1916 had created new imperatives for the commission. Flood protection needed to be accelerated and old levees brought up to grade. In the face of this pressing concern, possible long-range benefits of separating the Atchafalaya from the Red River or separating both the Red and the Atchafalaya from the Mississippi attracted little interest. However, it soon became apparent that the commission's report received far from unanimous support from Louisiana citizens. Perhaps the Louisiana Board of State Engineers expressed the most important reservations. The majority continued to endorse the separation of the Red and Atchafalaya rivers from the Mississippi. They thought the commission's estimate that closing Old River would lead to an increase of three to five feet in flood levels on the Mississippi too high—but a minority of the board thought the commission's estimate too low! In regard to the commission's proposal, the board expressed concern over the commission's failure to address

drainage problems if the levees were extended to offer full protection against the Mississippi's floodwater.⁶⁶ This was, of course, an old problem, which earlier riparian owners had solved by cutting ditches through the levees. It always seemed difficult to determine whether the water between the levees was more or less of a threat than the rising water behind them.

Many riparian landowners along the Atchafalaya and Red rivers advised a partial separation of the Atchafalaya and Mississippi rivers. In November 1920, landowners, businessmen, and state and federal representatives met and passed a resolution calling for further study.⁶⁷ The House Flood Control Committee held hearings on the Ransdell-Wilson bill in 1920 to hear all sides of the issue. Following those hearings, a new bill was introduced that simply called for another MRC examination of the Atchafalaya, Black, and Red rivers and for the commission's recommendations on measures "that will give the greatest measure of protection to the basins of said rivers from the floodwater of the Mississippi River consistent with all other interests of the lower Mississippi valley."⁶⁸ This wording guaranteed that no plan would be advanced that would threaten cities along the Mississippi from the Old River junction to the river's mouth. The bill was signed into law on 3 March 1921.

The new survey generated much discussion and controversy, first within the Corps and then among outside parties. The attention was natural because this was the first time the commission developed detailed drainage and levee plans for subbasins of the Atchafalaya, Black, and Red rivers. The commission's civilian engineers carefully examined conditions in Bayous Cocodrie, Saline, Natchitoches, and Rouge, as well as along parts of the main stems of the three rivers. To alleviate drainage problems, the junior engineer suggested a mix of levees, interior and lateral drainage ditches, sluiceways, and pumping stations.⁶⁹ Upon review, the assistant engineer eliminated the proposal for some minor improvements in the drainage of Bayou Rouge, leaving the cost of the project, excluding real estate acquisition and lateral drainage ditches, at about \$24.5 million. The engineers calculated that about 830,200 acres of land would have to be acquired, doubling the total cost of the project. Lateral drainage would cost about \$5,000 per square mile, but the engineers offered no figures on the amount of land requiring such drains.⁷⁰

An alternative to this plan was to move the line of protection as far forward as possible, i.e., to the main stem of the Mississippi. This involved two major projects: constructing a lock and canal at Old River, thereby cutting the normal flows between the Atchafalaya and

Mississippi rivers, and sealing Point Breeze Gap, an eight-mile break in the levee line extending upstream on the Mississippi from the beginning of the Atchafalaya River levee south of Old River. With these projects constructed and some necessary interior levee work completed, the four subbasins would receive effective protection.

However, any plan to separate the Atchafalaya from the Mississippi incurred substantial opposition. Within the Corps, Colonel Charles L. Potter, president of the Mississippi River Commission, argued that conditions along the Atchafalaya had "become stabilized." The river's "tendency to enlarge had been checked by sills....Upsetting of these fixed conditions may prove a dangerous experiment."⁷¹ New Orleans interests supported Potter, not out of any commitment to engineering theory, but because of apprehension that closing outlets upstream would throw more floodwater on the Crescent City. In 1921, their concern increased, when upstream interests closed a seven-mile gap between the main stem Mississippi River levee and the levee south of the Arkansas River. For years, this break, called Cypress Creek Gap, had served as a natural floodway whenever the Mississippi River exceeded 50 feet at the Arkansas City gauge. Area residents had begun to close the gap in 1916, but the Mississippi River Commission had objected to complete closure because of its effect on local drainage. However, a moderate flood in 1920 inundated 687 square miles in the Cypress Creek area, and the following year the MRC agreed to allow complete closure after a drainage canal had been built. This new levee greatly elevated flood heights below the closure.⁷²

The first hint of miscalculation came in 1922 when New Orleans citizens, already distressed about upstream closures, nearly panicked during that year's calamitous flood. As bad as the flood was, it appeared even more so when a misplaced water gauge indicated that a record flood was heading toward New Orleans. Engineers later discovered that the gauge was approximately eight inches off, but at the time, it appeared that only a natural crevasse at Poydras, a few miles below New Orleans, saved the city from unparalleled destruction. The New Orleans Association of Commerce organized a "Safe River Committee of One-Hundred" to lobby for higher levees and downstream relief outlets and against any upstream closures.⁷³

John Klorer, the New Orleans city engineer, developed plans for a spillway that would dump Mississippi River water into Lake Borgne—an idea going back to the days of Ellet and Cowdon.⁷⁴ He sent his proposal to John R. Freeman, one of the country's preeminent engineers and a past president of both the American Society of Civil Engineers and the American Society of Mechanical Engineers. Freeman

suggested substantial design changes in Klorer's plan. More significantly, he questioned the necessity of an artificial spillway at all and commented, "At first view it seems to me that the proper place for any spillway for the protection of New Orleans is by an enlargement of the connection to the Atchafalaya and then by a careful straightening, training and diking of the Atchafalaya."⁷⁵ Freeman was thus one of the first to suggest the improvement of the Atchafalaya to benefit downstream interests on the Mississippi and not primarily for navigation or local flood control.

Freeman's proposal for a spillway focused on the Atchafalaya River itself; he was not prepared to recommend turning all or part of the surrounding Atchafalaya Basin into a floodway without substantially more data and testing. He preached caution. In this, he differed markedly from another influential person, but one whose experience was in politics and polemics, not engineering. George H. Maxwell was a California lawyer who promoted federal irrigation at the turn of the century and helped generate support for the establishment of what eventually became the Bureau of Reclamation. An ally of Newlands, Maxwell was a committed propagandist on behalf of multipurpose river development and a national water policy. As early as 1911, he had recognized potential allies in New Orleans businessmen who were no longer convinced that levees alone could protect their city. He organized a Louisiana Reclamation Club to help reclaim southern Louisiana swamplands—an idea that led to far greater land speculation than actual reclamation. The club served as the nucleus of the National Reclamation Association, which Maxwell established within two years. Through this association Maxwell circulated his ideas about the Atchafalaya Basin.⁷⁶

In 1915, The National Reclamation Association published *Our National Defense—The Patriotism of Peace* in which Maxwell explained his ideas about the Atchafalaya. His project included bringing levees up to the 1914 grade, building necessary revetments, building spillways at New Orleans and developing a "great Atchafalaya Controlled Outlet System." The reclamation association estimated that it would cost \$228 million to implement Maxwell's ideas.⁷⁷ Encouraged by New Orleans interests, Maxwell returned to the fight after the 1922 flood. In the summer of 1925, he published a pamphlet confidently titled "A Report on What to Do to Prevent Devastating Floods in the Ohio and Mississippi Rivers and in the Lower Mississippi Valley and Insure Flood Protection to the City of New Orleans and Make the State of Louisiana Flood Proof Forever."⁷⁸ It was a remarkable document. Designed by a lawyer with no professional engineering training, it

resembles the flood control plan later adopted by the Corps of Engineers for the Atchafalaya Basin.

To supplement the levee system, Maxwell recommended a number of spillways, floodways, and storage basins. The cornerstone of the system was what he called "The Atchafalaya National Safety Valve." He explained, "The entire Atchafalaya Safetyvalve [sic] system, including everything from the Red River Basin to the Gulf of Mexico, should be taken over by the federal government and treated as one great National Safetyvalve for a dangerous National river. It should be under federal control and maintained at the expense of the federal government."⁷⁹ He proposed intake gates at the head of the Atchafalaya River and at two bypasses, one on each side of the river. He calculated that this system would allow 1.2 million cfs to flow from the Red River Basin into the Atchafalaya River and the two parallel bypasses. The water then would be stored in the "Atchafalaya Flood Storage Basin and Equalizing Reservoir," a basin which would be created by building levees around the Atchafalaya Basin, sending surplus waters down the Atchafalaya to the Gulf of Mexico. One levee line would go from Plaquemine to Morgan City and then southward to Sweet Bay Lake on the lower Atchafalaya River. Another levee would be built from Port Barre to the mouth of Teche and "as far as need be beyond toward the Gulf." A ring levee would be built to protect Morgan City. Maxwell's plan also called for the construction of auxiliary structures such as drainage channels, locks, and gates, and for straightening and enlarging the Atchafalaya River. The project "should be built under exactly the same principles for national expenditure that forts are built on the Hawaiian Islands or the Panama Canal fortified—those being done for protection against foreign invasion, and this great National Safetyvalve being built to protect against the invasion of the devastating forces of Nature."⁸⁰

In the face of proposals from Maxwell, Freeman, Klorer, and many others, John Ockerson maintained his faith in levees, including the eventual separation of the Atchafalaya and Red rivers from the Mississippi. As an engineer, Ockerson thought that closing Old River offered decided advantages in terms of time and cost over the construction of levees for each interior subbasin, but as an MRC member sensitive to political issues, he acknowledged that sealing this gap could not be done until adequate levee protection had been secured for downstream interests, especially for New Orleans.⁸¹

The controversy over closing the Atchafalaya, considerably exacerbated by the political agitation of anxious New Orleans citizens, caused the Corps of Engineers to develop its final report with great care.⁸² The Mississippi River Commission did not submit a report to

the Chief of Engineers until 28 February 1924. Rather than making specific recommendations reflecting either Ockerson's or Potter's point of view, the document analyzed alternatives, pointing out advantages and disadvantages, and estimated costs. The BERH returned the report to the MRC to correct various minor errors and to elaborate on certain points. The revised report was not submitted until 1 July 1926.⁸³

The engineering elements of the final report built on what the junior and assistant engineers had already accomplished in the previous years. The final report eliminated drainage work in Bayous Rouge and Natchitoches. This was no doubt because Ockerson had observed that the flow of Bayou des Glaises could be reversed, allowing that bayou to act as an effective natural drainage canal for both Bayous Rouge and Natchitoches.⁸⁴ Confining the major drainage work to Bayous Cocodrie and Saline reduced the total project cost from \$24.5 to \$22.9 million, excluding land acquisition.⁸⁵ The other option—building a lock and canal at Old River and closing Point Breeze Gap—could be constructed at a total cost of \$21.2 million, some \$1.5 million more than Ockerson's original estimate.⁸⁶

The final report followed Ockerson's recommendations very closely in rejecting other proposals dealing with the various subbasins. Conceding that nature might divert the Mississippi into the Atchafalaya regardless of people's desire, the commission advised that forcing the Mississippi down the Atchafalaya would not be cost-effective and would require a "prodigious sum" of money. The MRC also thought that cutoffs would be very costly and "far beyond any possible benefits," since the resulting increase in the Mississippi's velocity would destroy levees and damage land. The commission also rejected as too expensive an idea to widen the Mississippi south of Red River Landing. Finally, the report insisted that reservoirs "offer no practical solution" to Mississippi River floods as they would have to be extraordinarily large to have a serious impact.⁸⁷

Although this report is significant for the controversy it elicited and the plans it presented, of greater interest is the fact that the BERH did nothing with it. Presumably, the board desired more information and studies before sending it to the Chief of Engineers—this was the reason given in the annual MRC reports until 1935, when mention of the report no longer appeared.⁸⁸ A more likely explanation for the board's inaction is that the report was overtaken by events.

Three new factors drastically changed the calculations upon which any decision on the report would be based. First, under heavy pressure from New Orleans, the MRC approved the construction of an outlet at Point a la Hache in 1925. The outlet, completed the following year,

was actually an 11-mile artificial break in the levees, which was designed to go into operation whenever the river reached flood stage at Pointe a la Hache.⁸⁹ Second, again responding to New Orleans concerns, Congress passed an act on 17 April 1926 that directed the Corps to make surveys and cost estimates on the possibility of controlling Mississippi River floods between Point Breeze and Fort Jackson, Louisiana, (from just above the mouth of Old River to about 20 miles above the Head of Passes) by means of spillways. The law stipulated that no diversion into the Mississippi Sound should be constructed, thereby eliminating the Lake Borgne outlet as a possibility.

The Corps established a Spillway Board to conduct the investigations. In its report, submitted to Congress on 12 November 1927, the board's engineer officers fixed 2.75 million cfs as the maximum probable Mississippi River discharge at the mouth of Old River. They considered three options: levees without spillway relief, the Morganza plan, and the comprehensive plan. The first option provided a basis of comparison for the other two. It called for a continuation of the old "levees only" policy, but with a proviso that embraced levees on the Atchafalaya and Old rivers and Bayou des Glaises at an additional minimum cost exceeding \$40 million. The Morganza plan provided for the construction of floodways at Bonnet Carré, Caernarvon, and Morganza, Louisiana; the closure of Old River; and the enlargement of existing levees between Old River and Bonnet Carré, all at an estimated cost of \$87.3 million. The comprehensive plan involved enlarging the existing levee lines, constructing floodways at Bonnet Carré and Caernarvon, and constructing an uncontrolled floodway in the Atchafalaya Basin. Water would enter the basin when the gauge at Red River Landing (Angola) reached 40 feet. The board estimated that implementing this plan would cost \$63.6 million. While the officers considered the plan sound from an engineering point of view, they did not recommend it because they did not think it economically justified. Instead, the board recommended that only enough of the plan be constructed to protect against a flood equal to that which struck the lower Mississippi delta in 1927, with an additional levee freeboard (height of levees above the maximum flood stage) of three feet.⁹⁰

None of these recommendations were adopted, however, for the 1927 flood—the third new factor—resulted in a complete reevaluation of the commission's flood plans and a totally new flood control plan that relied heavily on turning the Atchafalaya Basin into an emergency drain for the Mississippi. Flood control became the main issue, and new political and economic imperatives forced changes that affected nearly every basin resident.

Chapter 4

Après Le Déluge: The Jadwin Plan

THE FLOODING THAT ENDED the MRC's dependence on levees occurred in 1927. One of the nation's worst peacetime disasters killed between 250 and 500 people, flooded over 16 million acres, and destroyed 41,000 buildings. The Red Cross at one time cared for over 600,000 people, half of whom lived in temporary camps.¹ Against this backdrop of dramatic flood relief operations, dispossessed basin residents, and an overwhelmingly sympathetic nation, the Corps of Engineers hurriedly revised plans that it had clung to for 50 years. There was no lack of advice to the Corps. Engineers throughout the country wrote articles proposing remedies. In many cases, an Atchafalaya Basin outlet was a major feature of the recommended solutions.

New Remedies for Old Problems

THE 1927 FLOOD DRAMATICALLY REVEALED the value of an Atchafalaya floodway for the protection of Baton Rouge, New Orleans, and other Louisiana communities on the Mississippi River. The artificial Point a la Hache outlet below New Orleans began receiving Mississippi River water during the first wave of floods in January 1927. Water continued to pour into this outlet until July. During the third and worst wave of floods in April, New Orleans officials implored Louisiana Governor O. H. Simpson to order the levee cut at Caernarvon (a few miles downstream from Poydras) to save the city. Supported by the Mississippi River Commission, Simpson gave the order on 26 April and blasting began three days later.² Still, the waters came.

Crevasses occurred throughout the Atchafalaya Basin. At the end of March, the water broke through the levees at Simmesport and Red River Landing. Another break occurred at Old River in early May. Water overtopped the Bayou des Glaises levee during the night of 13



High water in the Atchafalaya Basin, mid-May 1927. Animals cling precariously to high ground at Bordelonville soon after water overtopped the Bayou des Glaises levee.

May, rushing through a 600-foot crevasse at 30 miles per hour, inundating farms, and forcing people out of their homes in the middle of the night. Other breaks occurred in the levee the next day, and thousands of people required evacuation. On 17 May, a break occurred near Melville on the right bank of the Atchafalaya, shocking local residents who considered the Melville levee one of the strongest along the entire river. This break greatly increased the floodwater's velocity, rapidly resulting in severe caving of the river's left bank, which led to another break at McCrea on 24 May. Farther downstream, a crevasse occurred on 22 May, and the waters poured through until the middle of June, inundating Morgan City. These crevasses devastated the fertile areas surrounding Bayou des Glaises, the Atchafalaya, the Teche, and even around the lower Vermilion. Crops were destroyed and large parts of Lafourche, Terrebonne, St. Mary, and Assumption parishes were under water. From 1 to 12 feet of water covered almost all of St. Martin Parish. Struggling against overwhelming odds, basin residents found little consolation in the fact that the floodwater around them meant less flooding on the Mississippi River south of Red River Landing, and that their suffering and sacrifices brought a measure of safety to Bourbon Street.³

George H. Maxwell could barely control his anger. For years, he had preached about the importance of floodways in the lower Mississippi basin. For him, the 1927 flood indisputably proved his point. He indicted the Mississippi River Commission for having committed "the greatest engineering blunder in the history of civilization."⁴ He went on, "The Army Engineer-Mississippi River Commission stands charged



A crevasse at Moreauville during high water in the Atchafalaya Basin, mid-May 1927.

with a gigantic failure to fulfill its obligations to humanity and to the federal government that created it. It has not performed its duties. It has not 'kept the faith.' It surrendered to the Levee Hierarchy."⁵ Citing other engineers who had questioned relying on levees, Maxwell attempted to document what he considered the decades-old arrogance of the Army engineers. He accused the "levee hierarchy" of dooming the Waterway Commission created in 1917—and with it any hopes for a realistic flood control plan—without, however, mentioning that President Wilson chose never to appoint anyone to the commission. The "crowning folly" of the levee hierarchy was closing the Cypress Creek Gap, and he urged that the first emergency relief measure be the reopening of this outlet. He also advised the immediate construction of the Bonnet Carré Spillway just upstream from the Crescent City. Other spillways were required to convey overflow water around Cairo, Illinois; Helena and Arkansas City, Arkansas; and Greenville, Mississippi. At the expense of the federal government, the levees were to be restored at least to the condition that existed before the 1927 flood. Maxwell once more appealed for the construction of an Atchafalaya outlet system, as well as for auxiliary drainage channels through the St. Francis River Basin in Arkansas and Missouri and through the lower Yazoo River Basin from Satartia, Mississippi, to the Big Black River.⁶

Maxwell's histrionics masked important contributions to the flood control debate. The most important point was that floods had to be dispersed as well as confined, thus disputing the conclusions of both Humphreys and Eads. Although Maxwell was not the only one to voice this opinion, he was the first to draw national attention to its



Refugees in New Iberia flee high water in the Atchafalaya Basin in 1927.

applicability to the Atchafalaya Basin. However, his major goal was to forward the ideas of the Newlands bill and, more generally, to propagandize the need for multipurpose river development. In exchange for support from various New Orleans businessmen for his ideas, he helped formulate and articulate their—and his—position on Atchafalaya Basin flood control.

Maxwell rejected the proposition that flood control was simply an engineering problem. Solutions depended on the services of many professions, including physical, natural, and social science. Moreover, before implementing any engineering plans, the nation needed to decide on the appropriate role of the federal government. Maxwell, echoing other Progressive era thinkers, called for a national flood control policy that would guarantee both good conservation practice and genuine flood control. He spoke of flood *prevention*, an optimistic goal rejected as unrealistic by later water resource planners. Once policy was established, once data was comprehensively gathered, engineers could develop their designs with relative ease—or so went the argument.

James P. Kemper, a New Orleans engineer, member of the engineering subcommittee of the “Safe River Committee,” and a



Flooding in St. Martinville, 1927.

The famous "Evangeline Oak" on the Bank of Bayou Teche is in the center of the photograph.

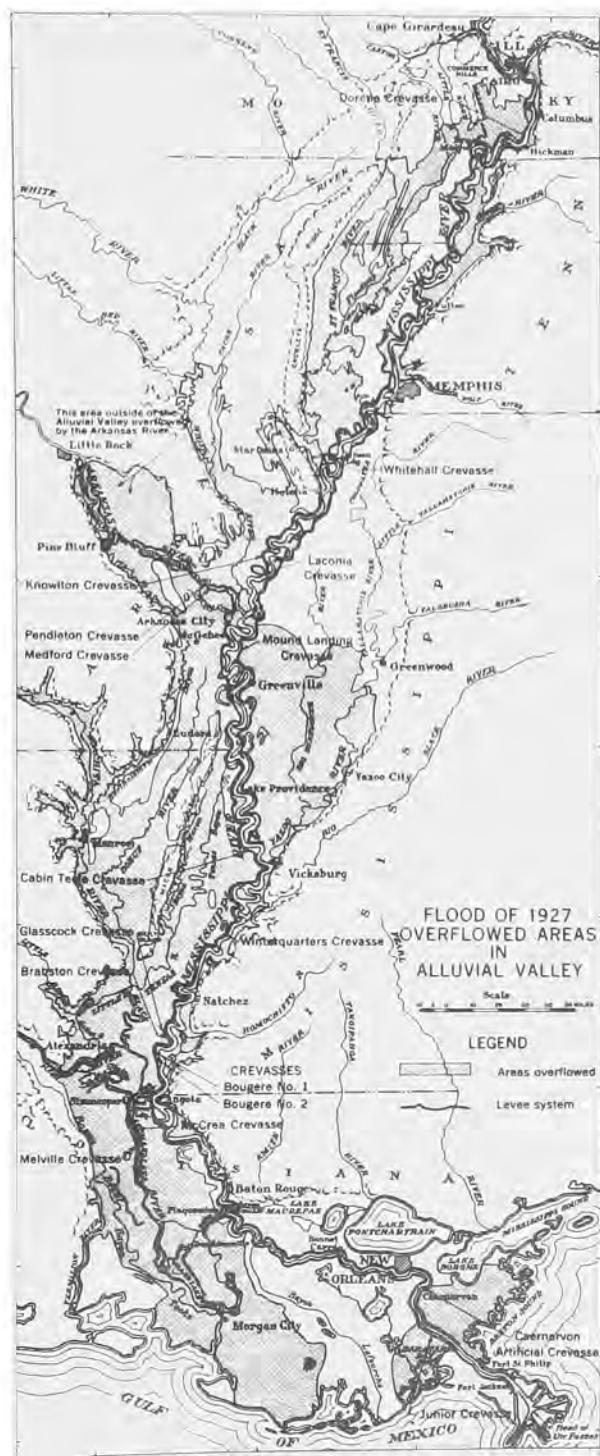
student of Mississippi River flood problems for 30 years, generally supported Maxwell. Under the auspices of the Atchafalaya Basin Protection Association and the National Flood Prevention and River Regulation Commission—an offshoot of the National Reclamation Association—Kemper prepared a "Plan for Flood Control in the Mississippi Valley by Means of Lower Flood Levels Through Outlets and Spillways Below the Arkansas River." Published in New Orleans in August 1927, and supported by Walter Parker, who was the general manager of the New Orleans Association of Commerce, John Klorer, and other eminent New Orleans businessmen, the plan called for turning much of the Atchafalaya Basin into what Kemper candidly called the Atchafalaya Reservoir. Levees would be upgraded and extended to follow various topographical features along the east and west sides of the basin. Gated canals and drainage channels would ensure drainage through the levees. A concrete seawall would protect Morgan City. Water would flow into this Atchafalaya Reservoir from as far away as the Arkansas River via a bypass channel extending from the Arkansas to the Black River. Once the water entered the Black, it would flow into Red River and into the Atchafalaya during floods.

The Atchafalaya River, flowing through the center of the basin, would also be leveed to just beyond the point where the Southern Pacific Railroad crossed it, approximately where I-10 is today. The levees would not be to lessen flood damage, but to prevent the river

from becoming the main channel of the Mississippi. They would contain the water and curb the flow going down the Atchafalaya. Kemper accurately perceived that this problem needed to be addressed regardless of whether the floodway was constructed.

Kemper's plan contained other interesting features. To complement the Atchafalaya Reservoir, he called for the construction of a totally new outlet that would extend from just west of Simmesport to Vermilion Bay and would carry some 800,000 cfs from the lower end of the Tensas Basin. He also suggested a channel through the middle of the Atchafalaya Reservoir with a deep enough bottom to ensure that it would have water regardless of how low the Red and Mississippi rivers became. The channel would serve both navigation and agricultural interests, guaranteeing a supply of fresh water for the pumps in the rice fields and preventing saltwater intrusion. Kemper also advocated the construction of two other spillways, one from the Mississippi River through Lake Maurepas and into Lake Pontchartrain, and the other close to Caernarvon, leading from the Mississippi into Breton Sound.⁷

John R. Freeman's approach was more conservative. "The long and bitter controversy of twenty to forty years ago," he wrote, "must now be considered as settled in favor of the levee system so completely that if a vote could be taken among those best informed living up and down the Valley, probably it would be ten to one in favor of the levee system."⁸ Nevertheless, Freeman warned against depending entirely on levees. He feared that the concrete and willow mattress revetment used to prevent bank caving and undermining of levees was insufficient and too time consuming to construct. He calculated that given the existing rate of construction it would take 200 years to finish the levee lines. Nor was he sure that the river should be contained everywhere in its wildly meandering path. Among the alternate methods of flood control that had been proposed, Freeman attacked four in particular: reforestation, reservoirs on head waters, detention reservoirs in the St. Francis and other basins below Cairo, and spillways. His major argument against spillways was that their use might impair the main Mississippi River navigation channel by diminishing the velocity of the floodwater and, consequently, lessening the Mississippi's ability to scour its main channel and carry sediment. Nevertheless, he did not entirely rule out spillways. If determined to be necessary—and Freeman thought temporary, emergency levee breaches would likely suffice—he recommended they be constructed below New Orleans, not upstream. Freeman thought Maxwell's idea of a controlled spillway in the Atchafalaya Basin worthy of investigation, but advised giving careful attention to the effect of such a spillway on shoaling in the main



Overflowed areas in the 1927 flood.

Mississippi River navigation channel. To find definitive answers to many of the questions required detailed research, and Freeman returned to his favorite subject: establishment of a national hydraulic laboratory.⁹

Variations on these plans were common, including patently hare-brained schemes. The House of Representatives Flood Control Committee listened to more than 300 witnesses, each with a unique perspective on the problem. The committee published 5,000 pages of testimony and eventually condensed the testimony into a few hundred pages of excerpts.¹⁰

Also, the committee received hundreds of solicited and unsolicited letters, many of which were printed in the committee hearings. However, out of all these proposals, only two were seriously considered. One came from Major General Edgar Jadwin, the Chief of Engineers; the other from the Mississippi River Commission.

Both reports reaffirmed the importance of levees, an unsurprising conclusion since both the commission and the Corps had always relied on them, and many delta residents thought the huge earthen barriers their only real defense against rampaging floodwater. Secretary of Commerce Herbert Hoover, who actively directed the flood fight in 1927, encouraged this faith in levees when he signed a joint report with General Jadwin which expressed confidence in levees, although with the postscript that spillways "in the least productive portion of Louisiana" should also be considered to protect New Orleans.¹¹



James Fieser, acting national chairman of the American Red Cross; Herbert Hoover, Secretary of Commerce; and Dwight Davis, Secretary of War, tour refugee camps in Vicksburg, Mississippi.

In response to General Jadwin's request at the beginning of May 1927, the Mississippi River Commission submitted its views on modifying the Mississippi River flood control plan at the end of September. While levees—to be raised an average of two feet—once more provided the primary line of defense, the commission significantly revised its earlier position by suggesting several diversion channels and spillways to complement the levee system. Spillways would be constructed at both Bonnet Carré and Caernarvon, each to carry 250,000 cfs. Leveed floodways would be developed at Cypress Creek (Boeuf Basin) to carry 600,000 cfs and through the Atchafalaya Basin to carry 1 million cfs. The plan also provided for additional dredging

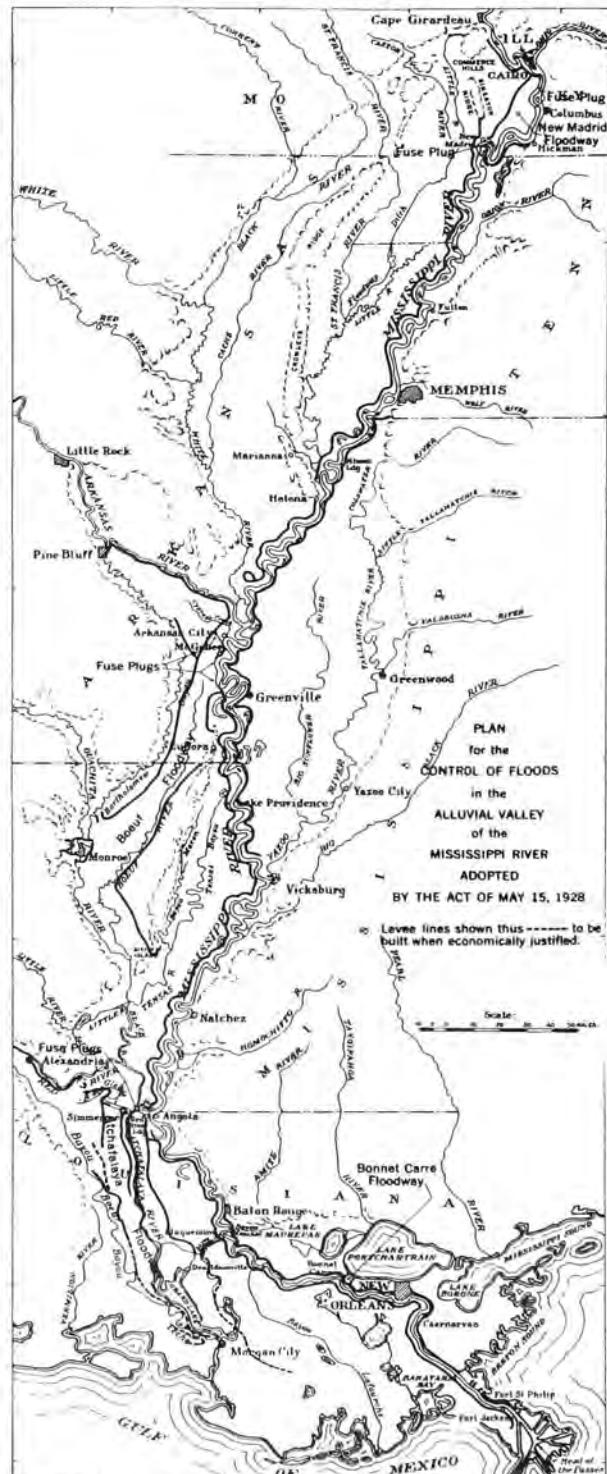
and bank revetment work. While the commission rejected other suggested flood control measures, such as headwaters reservoirs, reforestation, and cutoffs, it recommended further study of reservoirs in the White and Arkansas basins and a floodway in the St. Francis Basin.¹² Commenting on the Commission's plan, Kemper observed that it would be better to buy the Atchafalaya Basin outright—it would be ruined anyway—and elevate necessary railroads and highways.¹³

Mainly because of the expense—which included paying for all damages, flowage rights, and rights-of-way in the floodways—Jadwin was dissatisfied with the plan when he received it in September, and he returned it to the MRC for more work. The revised plan, submitted three months later, excluded substantial engineering changes, but reduced the cost from \$810 million to \$775 million. Jadwin still was not satisfied. He had another report prepared that melded the work of the MRC and the Corps of Engineers Spillway Board. This came to be called the Jadwin Plan, and it differed from the MRC's in several important respects. First, levees were to be built only slightly above flood stage instead of the five-foot freeboard that the MRC proposed. Second, it eliminated the Caernarvon Spillway. Third, besides the Boeuf and Atchafalaya floodways, Jadwin proposed another floodway running on the western side of the Mississippi from just below the Ohio River's mouth south to New Madrid, Missouri. The main purpose of this Birds Point-New Madrid Floodway was to relieve flood conditions at Cairo, Illinois. It would be created by lowering the levees along the Mississippi and constructing high set-back levees about five miles from the river. Including funding for bank stabilization, the total cost of the Jadwin plan was \$296.4 million. Unlike the MRC plan, Jadwin did not propose constructing levees on tributary streams. The Boeuf and Atchafalaya floodways would be uncontrolled; they would use relief or fuse plug levees that would automatically fail when the water reached the crowns of the levees. Finally, the Jadwin Plan called for the federal government to pay for revetment and 80 percent of the cost of flood control works, with the exception of ring levees around Morgan City, Melville, Simmesport, and Arkansas City. These ring levees would be built only if local interests paid half of the cost. The plan did not provide for the payment of damages, flowage rights, or rights-of-way in floodways. Jadwin thought the entire project could be executed over approximately ten years.¹⁴

The Jadwin Plan promised to protect against a 3-million-cfs "super flood," which was nearly 25 percent greater than the devastating flood of 1927. The Atchafalaya Floodway would accommodate 1.5 million

cfs, or half of the super flood. The rest would continue down the main stem of the Mississippi. On both sides of the Atchafalaya River near its head, fuse plug levees would be built. Jadwin made it clear that control of the relief levees should be in the hands of the United States and not of local interests. Back levees would be constructed on both sides of the Atchafalaya Basin "for the major part of its length" to enclose the floodway.

However, an area in the lower basin would be unprotected since "some space must be available for the Mississippi to spread into, and this territory is the most suitable hydraulically and the most undeveloped economically. It is largely swamp land now." The levees along the Atchafalaya River "should be maintained high and strong enough to prevent crevasses" and to protect those parts of the basin that had not already become swamp-land.



The Jadwin Plan authorized in the 1928 Flood Control Act.

In this way, too, the land along one side of the river would be protected if water breached a relief levee on the other side. Levees would also be raised and strengthened along the south side of the Red River to keep its water from entering the Atchafalaya Basin except during floods. Finally, Jadwin suggested that Kemper's idea of a floodway into Vermilion Bay, which would relieve Morgan City and surrounding territory from catastrophic inundation, would "be costly and complicated" and would unload "the burden on territory heretofore substantially untouched by Mississippi floods." Consequently, he did not recommend it.¹⁵

Jadwin's idea for the Atchafalaya Basin was in trouble from its inception. Congressman Whitmell P. Martin, who represented most of the basin, expressed his constituents' concerns on the floor of the House on 18 April 1928. He argued forcefully that basin residents could not possibly pay 20 percent of flood control costs, maintain the levees, provide rights-of-way, and pay consequential damages. He maintained that the people had spent all they could and more. Now the nation must bear the burden.

Indeed, nearly universal agreement existed that the problem was national and required federal assistance. To illustrate his point, Martin observed that the people of Morgan City, with a population of only 5,000, could hardly afford half the cost of a ring levee. He noted that the Mississippi River Commission had recommended that the floodway's capacity be 1 million cfs, resulting in a 13-foot maximum flood stage at Morgan City, whereas Jadwin's recommendation of 1.5 million cfs would result in a maximum 15-foot flood stage. In other words, Jadwin would require a higher levee with a 50 percent local contribution, while the MRC, going along with the recommendations of the



Major General Edgar Jadwin (1865–1931) served as the Chief of Engineers from 1926 to 1929.

Spillway Board, suggested extending the East Atchafalaya River Levee down to Morgan City and building a seawall in front of the town, with the federal government paying two-thirds of the construction expense.¹⁶

There were other major objections to Jadwin's plan. The diversion of 1.5 million cfs into the basin would submerge over 50 miles of Southern Pacific railroad track. Should the fuse plug levees give way in an extreme flood, as intended, even territory that had escaped the 1927 disaster would be inundated. "To make the Atchafalaya River take care of one-half of the water that flows down the Mississippi in time of extreme flood," Martin continued, "without limit or control, would be inviting a disaster that would make that of 1927 pale into insignificance."¹⁷ The congressman complained that Jadwin provided no means in his plan to control water when it reached the end of the east and west guide levees. In the west, water would go around the levee, flooding the entire eastern side of Bayou Teche and threatening Charenton, Baldwin, Franklin, Centerville, Patterson, Berwick, and Morgan City west of the bayou. In the east, conditions would be no better. The water would "cover the entire west side of Bayou Lafourche as far up as Donaldsonville and would flood a large portion of the parishes of Terrebonne, Lafourche, and Assumption."¹⁸

Clearly, Jadwin recognized that refinements would have to be made. Appearing before the Senate Commerce Committee, he explained to Senator Ransdell his position on the Atchafalaya Basin:

General Jadwin: We are going to take care of everything down there that is economically justified. We have an entire sum in the estimate. You know that country is developing down there, and we want to take care of that water in a way that will fit in with them...we intend to protect everything that is economically justified.

Senator Ransdell: Entirely down to the Gulf?

General Jadwin: Yes. We intend to go down through there as far as the soil will bear levees, and we may have to make some turns and we may have to put a lock in where we cross the intercoastal [sic] waterway.

Senator Ransdell: And provide for a million and half second-feet that you suggest?

General Jadwin: Yes.¹⁹

Congressman Martin welcomed Jadwin's testimony, for it implied to him that the plans were subject to rather drastic modifications. On the other hand, Jadwin's statement could scarcely generate a vote of

confidence. The general almost admitted that his strategy was not particularly well conceived, even regarding major parts of the project. Also, his willingness to protect "everything down there that is economically justified" may not have meant much in light of the statement in his report that the country was "the most undeveloped economically." It is not clear that Jadwin had any appreciation for the timber and mineral riches of the area—rock salt had been commercially mined on Avery Island since 1879, and oil was discovered in Iberia Parish in 1917—nor did he show any appreciation for the unique Cajun culture that was inextricably linked to the water.²⁰

But Martin was willing to go along with Jadwin's plan, if only because the bill the House was considering provided for a board of civilian and military engineers to examine the plan and recommend modifications. Martin undoubtedly assumed that substantial modifications would be made. Also, in answer to Martin's request, Senator Ransdell had inserted into the Senate version of the bill authorization for the board to conduct additional surveys between Baton Rouge and Cape Girardeau "before any flood-control works other than levees and revetments are undertaken on that portion of the river." The Senate bill had originally authorized additional surveys only between Point Breeze and Cape Girardeau. By extending the southern point to Baton Rouge as Martin wished, Ransdell allowed consideration of the Atchafalaya Basin problem.²¹

The conflict over engineering plans for the Atchafalaya Basin reflected more general concern over the Jadwin Plan. Most engineers who testified before congressional committees doubted one part or another of Jadwin's report. Moreover, the general's refusal even to send the MRC plan to Congress until the House Flood Control Committee insisted upon it upset both the commission and members of Congress. At times, Jadwin's behavior bordered on arrogance, as in this exchange with Nebraska Congressman Willis Sears of the House Flood Control Committee:

Mr. Sears: You do not expect us to give any more consideration to your plan than to others, except that it is one of the plans suggested? You do not expect us to disregard these other plans do you?

General Jadwin: We are the Chief Engineers in the executive branch of the Government, in the War Department, acting under the President. We consider ourselves as the engineers on rivers and harbors and on flood control matters under your laws. You can call in anybody you want to, Judge.

We have come right along on the line of procedure, but you have authorized us to do it and we have turned this report over to you.

Mr. Sears: There are three general plans to be considered and there might be other plans gotten up by civil engineers who realize that they know something. We must consider all of the plans, must we not?

General Jadwin: Well, if you were the board of directors on a railroad and had a chief engineer and a competent staff, would you, before you acted on plans as to building a bridge, would you go along the railroad and ask different people for their views as to whether this bridge should be built?

Mr. Sears: I would consider them, give other plans consideration; I would not shut my mind off.

General Jadwin: Would you give your chief engineer's plans consideration?

Mr. Sears: Absolutely, but I would not shut my mind off. If they came to me with plans I would consider them.

General Jadwin: You would consider them in preference to your own engineers?

Mr. Sears: No, sir; but if there were other plans that evidenced even greater thought and study on that subject, they should be considered.

General Jadwin: When we went into this I told the boys that we would study it out, and if anything came up that was better than we were going to accept it. We had public hearings and we had correspondence, and we gave consideration to everything which was offered to us and considered it.

Mr. Sears: You do not expect us to accept any plan simply because you present it, and to shut our minds off to any other thoughts?

General Jadwin: The Rivers and Harbors Committee, though normally acting with the Chief of Engineers on this procedure, generally accepts his views and those of our engineers.

Mr. Sears: I am not talking about that.

General Jadwin: We are following the law; that is your law.

Mr. Sears: You are not answering my question, General. You do not expect us to accept a plan simply because you have presented it, do you?

General Jadwin: I think you would do a whole lot better to take our engineering than your own.

Mr. Sears: You have not answered that question, General.

General Jadwin: I do not know whether you are going to do it or not, but I will say if your report is going into Congress—

Mr. Sears: You do not expect us to adopt a plan simply because you have presented that plan, do you, and shut our eyes to all other plans that may be presented here?

General Jadwin: You have a force of engineers, a competent force of engineers authorized for this purpose.

The Chairman [Frank Reid (R-Ill.)]: Why don't you answer that question?

General Jadwin: Yes, I think you ought to do it.²²

Congressman Reid thereupon directly asked Jadwin if he thought the Flood Control Committee ought to ignore the plans of the MRC, the "duly authorized agency" in regard to Mississippi River flood control. Jadwin first attempted to evade the question by noting the authority of the Chief of Engineers to conduct multipurpose river basin investigations under the authority of the 1927 Rivers and Harbors Act. Reid was infuriated:

The Chairman: I would like to have you answer the question. I asked you a direct question.

General Jadwin: I do not ignore that. I take that into consideration. I am not asking you to ignore that. Under the law the Chief of Engineers is authorized to do this and—

The Chairman: We are not asking you who has that. You are our servants and we are not yours in any way or in any manner.

General Jadwin: Yes; we are your servants; that is true.

The Chairman: I would like to have you tell this committee whether you think we should not consider in the solution of the problem the plans and ideas of the duly authorized agency of the United States to control the floodwater of the Mississippi River, the Mississippi River Commission.

General Jadwin: Well, do you feel qualified to pass on engineering matters?

The Chairman: That is not an answer to the question.

General Jadwin: I am trying to get it, but there is a shade of meaning I am not sure of.

Jadwin's words provided bullets to his enemies and headaches to his supporters. Gifford Pinchot, the first head of the U. S. Forest Service, reflected the views of many when he accused the Chief of Engineers of never abandoning a position that he had once expressed. North Dakota Senator Lynn Frazier remarked that Jadwin tried to prove only the value of his own plan and shut his eyes to all others.²³ On the other hand, the Mississippi River Commission, everybody's favorite whipping boy during the 1927 flood, received little criticism during the congressional hearings. It seemed that any organization incurring General Jadwin's displeasure could not be all bad.

The major problem awaiting congressional resolution was neither administrative nor engineering. Rather, it was financial. One issue was the total cost. Jadwin had anticipated a total expenditure of about \$296.4 million, the MRC projected about \$775 million, the Senate bill called for about \$325 million, and the House bill for about \$473 million. Washington Senator Wesley Jones, author of the Senate bill, admitted that the cost might eventually be much more. His bill provided for surveys that could lead eventually to substantial, and costly, modifications of the original plan. While many congressmen did not wish the kind of open-ended approach Jones advocated, almost all agreed that estimates were just that—estimates. Additional appropriations would certainly be required over the next decade.²⁴

A greater financial problem was the cost of damages resulting from use of the floodways. In his plan, Jadwin offered no federal relief for damages to the railways, towns, and agricultural land that would be inundated should the floodways be used. He insisted that the floodways were natural overflow channels. Those who chose to live in the floodways must, in consequence, accept the servitude imposed by floodwater; in short, the government had a right to flood their property. Furthermore, Jadwin suggested that states pay for private property confiscated for flood control works. The MRC, quite in contrast, recommended that the federal government pay for damages in full. The commission reasoned that floodway residents should not bear the burden for flood relief that mainly benefitted other states.²⁵

The appropriate federal contribution to offset flood damage was one issue; a related question focused on cost-sharing of levee construction. Predictably, most Mississippi delta politicians wanted the federal government to pay the entire cost of future levee construction in floodways, including payment for rights-of-way, arguing, as did Congressman Martin, that local levee boards had paid enough and simply could not contribute more. Others outside the Mississippi valley were equally insistent on a local contribution. Even the commission

plan, generally more sympathetic to flood victims, required local interests to pay one-third the cost of raising levees to the 1914 standard and to furnish rights-of-way for levees. The commission's reasoning was unusual. Rather than arguing the usual point that the federal government should not provide special benefits to one section of the country, it stressed the necessity of local contributions to prevent people from making "inordinate demands for flood-control work not needed nor justified."²⁶

In Congress, those who favored eliminating local contributions dominated. Enough figures were thrown out on the Senate and House floors to convince even the most suspicious politicians that local levee boards simply could not bear increased financial burdens. Neither Senator Jones nor Congressman Frank Reid, who framed the bills in their respective chambers, wrote into their legislation any local financial liability aside from providing rights-of-way on the main stem of the Mississippi. Congressman Reid explained the Flood Control Committee's position to the House on 19 April:

The committee is of the opinion that the "local contribution" policy of the Government should be abandoned and believes that to make the construction of flood-control works dependent upon local contribution will result in the failure of the whole, and another disaster such as that which appalled the Nation last year might happen. Divided responsibility resulting from the local contribution policy has been the primary cause for the failure of the protective works, and permitted weak levees, which, when they failed, not only flooded their own districts but also brought disasters to the neighboring districts and neighboring States.²⁷

Although many members of Congress thought federal largess to the lower Mississippi valley was warranted, President Calvin Coolidge closely guarded government coffers. He opposed any flood control plan that imposed the full financial obligation upon the federal government and favored the Jadwin Plan partly because it required more from local interests. In his message to Congress, he claimed that the people of the Mississippi delta were receiving special benefits and should pay for part of the cost. He also opposed federal payment for damages caused by the building of flood control works. Because Congress did not want to risk a presidential veto and the possibility that subsequent political maneuvering would ensnare any flood relief legislation, congressional leaders searched for a way out of the impasse. In late March, the Senate

had passed the Jones bill, which generally supported the Jadwin Plan except for the financial provisions. The House Flood Control Committee had favored the MRC plan, but in April compromise was in the air. The House accepted the Jadwin Plan along with the proviso in the Senate bill that "the principle of local contribution...is sound, as recognizing the special interest of the local population in its own protection, and as a means of preventing inordinate requests for unjustified items of work having no material national interest." Coolidge thereupon agreed that the federal government would pay for all project construction since local interests in the alluvial valley of the Mississippi River had already spent approximately \$292 million on flood control, whereas the United States had paid only \$71 million. With this compromise, the Jones-Reid bill as it was now called sped through the House and was sent to the conference committee the first week in May.²⁸

After looking over the conference report, the President had second thoughts. He proposed two changes that were to cause an enormous amount of litigation and anxiety in the floodways. First, he insisted on the insertion of the word "additional" in the first paragraph of Section 4 of the bill. The revised paragraph then read:

The United States shall provide flowage rights for additional destructive floodwater that will pass by reason of diversions from the main channel of the Mississippi River: Provided, That in all cases where the execution of the flood-control plan herein adopted results in benefits to property such benefits shall be taken into consideration by way of reducing the amount of compensation to be paid.

By inserting the one word, Coolidge evidently believed that the government would have to make no payments on backwater areas of the Yazoo, Arkansas, St. Francis, and Atchafalaya rivers. The other important change was in Section 3, where the President caused the phrase "which are not now overflowed or damaged" to be inserted. The modified paragraph became:

No liability of any kind shall attach to or rest upon the United States for any damage from or by floods or flood waters at any place: *Provided, however,* That if in carrying out the purposes of this Act it shall be found that upon any stretch of the banks of the Mississippi River it is impracticable to construct levees, either because such construction is not economically justified

or because such construction would unreasonably restrict the flood channel, and lands in such stretch of the river are subjected to overflow and damage which are not now overflowed or damaged by reason of the construction of levees on the opposite banks of the river it shall be the duty of the Secretary of War and the Chief of Engineers to institute proceedings on behalf of the United States Government to acquire either the absolute ownership of the lands so subjected to overflow and damage or floodage rights over such lands.

The Senate and House conferees promptly approved these changes. Both houses overwhelmingly passed the measure, and the President signed it into law on 15 May 1928.²⁹ The law authorized \$325 million for Mississippi River flood control.

This act signified a fundamental shift in the nation's willingness to accept the burden for flood control, even though another eight years passed before Congress formally established the principle that flood control was a proper federal activity. Nearly three-quarters of a century removed from the event, our perspective becomes blurred. It is easy to forget that the *entire* federal budget in 1930 was \$3.3 billion, approximately the same as the Corps of Engineers annual civil works budget in the early 1990s. Of this money, 25 percent went to veteran's services and benefits, 22 percent to national security, and 21 percent to interest on the national debt. That left about \$1 billion for all other government functions. Even given the fact that Congress expected to spend the \$325 million over a ten-year period, the size of the federal commitment is impressive.³⁰ Probably no other water project involved as great a percentage of the federal budget at the time of its authorization as did Mississippi valley flood control.

The Special Board

AS WITH MANY COMPROMISE ACTS—and few legislative acts are not—the 1928 Flood Control Act offered a little bit to everyone, thus ensuring subsequent confusion. While the legislation authorized Jadwin's flood control plan, it consoled MRC supporters by providing for a board to—

consider the engineering differences between the adopted project and the plans recommended by the Mississippi River Commission...and after such study and such further surveys as

may be necessary, to recommend to the President such action as it may deem necessary to be taken in respect to such engineering differences and the decision of the President upon all recommendations or questions submitted to him by such board shall be followed in carrying out the project herein adopted.³¹

However, the board consisted of only three members: the Chief of Engineers, the president of the Mississippi River Commission, and a civil engineer to be chosen by the President. In contrast, the original Jones bill would have authorized a board that included the Secretary of War, the Chief of Engineers, the president of the Mississippi River Commission, and two civilian engineers. This was the board in which Congressman Martin had placed such faith. Such a panel might have escaped domination by the Chief of Engineers, but the board actually authorized could not. This was especially so after Colonel Potter retired as president of the Mississippi River Commission on 10 June, and Colonel Thomas H. Jackson replaced him. Jackson's reputation in flood control had been established in California, where as a young captain from 1907 to 1910 he had developed a far-reaching plan to control floods in the Sacramento River Basin. However, Jackson was no expert on the Mississippi and, unlike Potter, could not be expected to stand up to Jadwin.

President Coolidge chose Carlton W. Sturdevant to fill the civil engineer position. Sturdevant had worked as a civilian engineer for the Corps in Memphis and later served as an engineer colonel in World War I. By 1928, he had been in private practice for several years. Although he was an expert in dredging, he apparently was not well acquainted with river hydraulics. Thus, while the board was better



Thomas Herbert Jackson (1874–1937) was promoted to brigadier general in 1928, soon after becoming president of the Mississippi River Commission.

than nothing, MRC supporters correctly suspected that it would not consider major modifications of the Jadwin Plan.³²

In June and July 1928, the board traveled through the alluvial valley of the Mississippi River, holding public hearings and listening to the views of local interests. As opponents feared, however, General Jadwin severely limited the scope of the issues addressed at the hearings. His interpretation of the 1928 act was that the board's charter was simply to reconcile differences between his plan and the MRC's. He maintained that, in general, further surveys were not necessary because of the extensive work already done by the commission. In contrast, opponents of his plan emphasized the act's authorization of "such further surveys as may be necessary." But, whenever speakers at the public meetings suggested further work, Jadwin ruled the remarks out of order. Moreover, according to J. P. Kemper, the hearings were poorly advertised; occasionally, notices were posted only hours before the board met. Shedding any semblance of real flexibility, Jadwin gave the impression of someone ironing out details rather than overhauling plans in response to new information.³³

In fact, Congress anticipated major revisions to the 1928 act. In Section 10, it had urged the Corps to submit "at the earliest practicable date" surveys of the tributaries of the Mississippi (not including the Atchafalaya) and had expressly ordered that the surveys be done simultaneously with the flood control work on the main stem of the river. Among other matters, these surveys were to consider the effect that tributary reservoirs would have on downstream, main stem flooding. Congress thought the Jadwin Plan a beginning. Jadwin wished it to be an end.

At the New Orleans hearing, representatives from the Atchafalaya Basin strenuously opposed a fuse plug levee in the Bayou des Glaises area between Simmesport and Hamburg. Instead, one area resident proposed that the federal government take what was actually necessary for flood control, but not allow the floodwater to inundate the entire Atchafalaya Basin. Others argued that both the Jadwin and MRC plans allowed too much water into the basin. L. Kemper Williams, president of the Atchafalaya Basin Protective Association, argued that even the MRC plan allowed in enough water to devastate valuable sugar land. A few days later, he offered on behalf of the association a new plan—really an appeal—that contained much data, although it was still incomplete.

In summary, the plan called for—

1. Extensive leveeing of the Atchafalaya River from the junction with Old River to the Gulf of Mexico and increasing the river's capacity to 750,000 cfs.
2. Spillways at Caernarvon and one other location upstream from New Orleans.
3. Raising main stem levees three feet.
4. The Birds Point-New Madrid Floodway.
5. Reservoirs in the White and Arkansas River basins sufficient to hold 13 million acre feet of water.³⁴

The association also pointedly insisted that the board had the right to reject both the Jadwin and MRC plans should it decide neither was appropriate.³⁵

Jadwin held out little hope that the association's appeal would have much effect on the board's deliberation.³⁶ Hardly anyone witnessing the hearings would have disagreed. After the New Orleans hearing, members of the association attempted to talk to recently promoted Brigadier General Jackson, but he refused to enter into a discussion unless the association members first conceded that either the MRC or Jadwin Plan would improve the situation in the Atchafalaya Basin. When no one from the association spoke up, Jackson "bluntly terminated the conversation with a refusal to listen and brusquely walked away, leaving his interviewers staring at each other in astonishment."³⁷

The Board of State Engineers also expressed concern about the Atchafalaya floodways. The chief state engineer, George C. Schoenberger, submitted a memorandum to the Special Board at the end of July 1928, in which he suggested reducing the maximum discharge through the basin from 1.5 million cfs—which he calculated would flood as much land as had been inundated in the 1927 flood—to the 950,000 cfs contemplated in the MRC plan.³⁸ He also advocated widening the opening in Berwick Bay (which would require the federal government to purchase the town of Berwick), constructing a lock in Bayou Teche, and extending the levee line as near to the Atchafalaya Bay as possible. Schoenberger's plan was designed to evacuate water from the basin as quickly as possible and to prevent backwater from flooding developed land. He was especially wary about the effect of backwater on lands that might prove a bonanza for oil (and state) interests: "It is possible that in the near future vast development will occur in the oil industry in the Grand River Section of the Atchafalaya

Basin, and, to facilitate the handling of this commerce through the Plaquemine Locks, it might be necessary to place locks at the head of Grand River.”³⁹ Surprisingly, Schoenberger disagreed with the Army engineers’ recommendation to build ring levees around Simmesport, Melville, and Morgan City. He argued that these towns would be “isolated from the rest of the world” during a flood and many lives would be endangered should the ring levees fail. The “fair thing to do,” he suggested, would be “for the Federal Government to acquire the property and have the people dwelling in them abandon these towns, or else elevate their towns for them well above flood height.”⁴⁰ However, in an age two generations removed from serious consideration of nonstructural solutions to flood problems, Schoenberger’s proposal little appealed either to engineers or to guardians of the federal treasury.

The Special Board submitted its findings within 60 days after it had been organized, much to the disgust of Kemper and his associates. As expected, the board concluded that “the adopted project [Jadwin Plan] is, all things considered, the best comprehensive plan that can be formulated.”⁴¹ Board members did make some relatively minor changes, but few affected the plans for the Atchafalaya Basin. The two most significant changes were to use fuse plug levees at the Birds Point–New Madrid Floodway in Missouri and to request \$20 million more for contraction works on the main stem of the Mississippi below Cairo. This last request brought the total federal cost of the project to \$318.5 million.

Considering later development along the Mississippi River and its tributaries (though not the Atchafalaya), one comment of the board bears direct quoting:

We cannot keep taking space from the river and at the same time give it the room it requires except by allowing it space elsewhere, either vertically or horizontally. To construct works to allow the river the flowage room it needs, as we are now doing, and at the same time take land from it elsewhere before these works are constructed, is not a consistent procedure. It is possible that in the future so much land in the flowage areas may become cleared that the resulting velocities will reduce flood heights and thus permit additional reclamation.⁴²

The statement showed the Corps’ increased sensitivity to the effects of human occupation on flooding. Wherever people settled, land was drained and cities built. However, reclaiming land did not prevent

floods; it only controlled them, and the water eventually had to go somewhere. If, as the board correctly saw, floodwater requires space "either vertically or horizontally" and development was taking away the horizontal space, then levees would have to be made ever higher. However logical, this conclusion was hardly satisfactory. Weak foundations—common along the lower Mississippi—would inevitably lead to subsiding levees that would require constant repair regardless of future economic development. And should human development increase on the floodplain, the necessity of building ever higher levees promised to drain government purses even more. In any case, the board's foresight on this issue was scarcely noticed in the wave of protest over its refusal to recommend significant changes to the Jadwin Plan.

Protestors saw two main problems immediately. Both concerned real estate. Although the center of opposition was elsewhere—in the Boeuf Basin north of the Red River—the problems also affected plans for the Atchafalaya Basin. First, Boeuf Basin residents objected to Jadwin's proposal to construct a fuse plug levee in the Boeuf Floodway. They preferred the Mississippi River Commission's plan to construct a control structure which could more precisely regulate the volume of water pouring into the basin. Anticipating such opposition, the board had stated in its report that—

a so-called controlled spillway would probably not be really controlled as well as a fuse plug levee, since the operation of it would be subjected to human judgment in times of hysteria; people above it would want it opened too soon and people below it would want it left closed too long; public hearings might have to be held before it could be opened, injunctions might prevent it from being opened at all.⁴³

In other words, why not allow a fuse plug levee to give way naturally rather than attempt to arbitrate the conflicting demands of people along the Mississippi River? The board's position further confused a complex situation, for many Boeuf residents doubted that the Boeuf Floodway was needed at all. There were many skeptics, including the new state engineer of Louisiana, Harry Jacobs. He believed that a system of reservoirs along the White and Arkansas rivers would eliminate the necessity for the floodway.⁴⁴

The second problem dealt with damages and flowage rights. The Jadwin Plan insisted that flowage rights were natural servitudes attendant to the land, and the federal government had no obligation to

reimburse landowners for these rights.⁴⁵ In his report, Jadwin admitted that flowage rights should be paid for use of land in the Bonnet Carré Spillway and the Birds Point-New Madrid Floodway, since those areas had formerly been protected. His idea, however, was to have the states or local interests pay for flowage rights rather than the federal government. Section 4 of the 1928 Flood Control Act clearly disavowed that position. By noting that the United States would pay for flowage rights for "additional destructive flood waters that will pass by reason of diversions from the main channel of the Mississippi," the act definitely encompassed Bonnet Carré, Birds Point-New Madrid, and several other areas where setback levees were to be constructed. Moreover, residents of the Atchafalaya and Boeuf basins thought that Section 4 also provided for compensation for damages to their land. In their haste to respond to the devastation of the 1927 flood, legislators had enacted a measure that authorized the Jadwin Plan—itself hastily conceived—but which contained a section arguably inconsistent with that plan.⁴⁶

Congress appeared ready to leave it to the executive and judicial branches to reconcile the differences. The Special Board was no help. It was charged to resolve only engineering differences between the MRC and Jadwin plans. In any case, Jadwin would never have allowed the board to retreat from a position he had so completely embraced. President Coolidge's last-minute conditions before signing the legislation added to the confusion. To take one example, how should one determine the *additional* destructive flood waters resulting from construction of the Atchafalaya and Boeuf floodways? In sum, there were enough complaints about both the engineering and financial aspects of the Jadwin Plan that calls were made to suspend work before construction even began.

The Unwinding of the Jadwin Plan

ON 13 AUGUST 1928, President Coolidge, exercising his customary caution, approved proceeding with the Jadwin Plan except for those provisions regarding the acquisition of land rights for constructing spillways and floodways.⁴⁷ In November, he approved the acquisition of land and flowage rights for the Bonnet Carré Spillway. The following month, he did the same for the Birds Point-New Madrid Floodway. In December, he also endorsed the construction of a levee from near Bordelonville, Louisiana, to near Hamburg, Louisiana, on the Bayou des Glaises. Finally, on 13 and 16 January 1929, Coolidge

authorized the purchase of rights-of-way for levees (but not for flowage rights) and the initiation of levee construction in the Boeuf and Atchafalaya floodways, respectively.⁴⁸ On 19 January 1929, General Jadwin notified the MRC president, Brigadier General Jackson, to proceed with acquiring the rights-of-way for the Atchafalaya Basin protection levees.⁴⁹

By then, the Corps of Engineers had obtained offers to sell both rights-of-way and flowage rights in the Atchafalaya and Boeuf basins. The Corps had been gathering the data in the expectation that Congress might alter the law and provide compensation for flowage rights.⁵⁰ The negotiations had occurred during November and December 1928, and they had not been easy. Major W. H. Holcombe, the Second New Orleans District engineer, complained:

It was impossible to secure active and prompt attention from the majority of owners. Our representatives were often asked to return three or four times, with the promise that the forms would be signed within a few days. Many owners refused consideration entirely, others have procrastinated, while others have been unable to reach any satisfactory conclusion and have preferred to await further developments before committing themselves.⁵¹

Only 38 percent of the landowners had responded, often with an asking price for both flowage rights and rights-of-way several times above the assessed value of the land. However, under Louisiana state law—which at Jadwin's direction the Corps used for assessment purposes—lands could be condemned at their assessed value for flood control purposes. Louisiana Representative Riley Wilson complained that there was no attempt to induce landowners to accept lower prices and those who failed to respond were confused about the government's intentions.⁵² This was true, since in both the courts of law and the halls of Congress changes were being contemplated, and the inevitable rumors and stories rendered it impossible to predict the future of the floodways.

As early as November 1928, several members of Congress, including Senator Ransdell and Representative Wilson, had categorically stated that the 1928 Flood Control Act provided compensation for flowage rights. Senator Ransdell stated that it was "inconceivable that the government would take the property of its citizens to benefit other citizens without giving full compensation."⁵³ It was one thing for the government to take land for commerce and navigation—in other words, for the general public good. It seemed quite another to take

private land without "full compensation" in one location to protect private land elsewhere. On 14 May 1929, a dozen senators and congressmen, including Wilson and Ransdell, submitted a brief to the new President, Herbert Hoover, requesting both an executive and legislative interpretation of the flood control act. They expressed their strong belief that Congress had intended "to assure compensation for flowage rights over land embraced within all spillways and floodways and for damage where injury is done to property; also for easements putting additional servitudes upon land in the building of spillways, floodways, or other diversion works for flood prevention under the act."⁵⁴ The delegation also thought that it was Congress's intent to grant the President final decision-making authority throughout the duration of the project (the final word would be the President's, not the Chief of Engineers'). Finally, the senators and representatives called for a temporary cessation of work until the intent of Congress was clarified, either through executive interpretation or legislative amendment.⁵⁵

Senator Ransdell followed up this brief with a personal appeal to Hoover. He wrote that Congress had adopted the Jadwin Plan with several reservations, "which in the opinion of every member of that body with whom I have conferred, are not being carried out in the spirit of their conception." General Jadwin's interpretation of additional destructive flood waters, Ransdell continued, "is altogether different from the understanding thereof generally accepted." The senator reiterated that it would be best to delay the prosecution of the project until the President had time to confer with the engineering community.⁵⁶

Hoover forwarded the brief from the congressional delegation to Secretary of War James W. Good, who in turn formally asked the Attorney General William D. Mitchell for his legal opinion. Mitchell responded in the middle of July. To Good's first question—whether the Jadwin Plan was in fact "already fixed and not subject to review or change by this administration"—Mitchell answered with an unequivocal "yes": "In my opinion," he wrote, "the project thus authorized by the act of May 15, 1928, is thus identified and now fixed, and is not subject to change, save by future congressional action."⁵⁷ Mitchell refused to respond to the second question, dealing with the issue of compensation for flowage rights in the Atchafalaya and Boeuf basins, because of ongoing litigation in the federal courts.⁵⁸

Although Hoover may have been prohibited from making changes in the Jadwin Plan, pressure mounted to do something. A Committee on Flood Control of the American Engineering Council published a

report in May that severely criticized the work of the Special Flood Control Board headed by Jadwin. The committee believed "that the intent of Congress and the best interests of the nation were defeated by the constitution and action of the board created to adjust the differences of the Jadwin and Mississippi River Commission plans," and it "earnestly" recommended the creation of a federal board of review "composed of nonpartisan and competent civilian engineers with authority to develop the best possible solution of the Mississippi flood control problem."⁵⁹

Further calls for delay were heard from the Mississippi Valley Flood Control Association, which met in July 1929. The association generally approved the main provisions of the Jadwin Plan, but members predictably argued that Congress intended to offer compensation for flowage rights in all spillways and floodways. They urged Congress to pass clarifying legislation to resolve any questions.⁶⁰ About the same time, representatives from the Missouri and Tensas (Boeuf) flood control associations publicly chastised Secretary of War Good for "dictatorial methods" for expressing his complete confidence in the soundness of the Jadwin Plan.⁶¹

Midwestern interests expressed their concern about the Jadwin Plan, but from a very different perspective. They argued that the Corps had underestimated the value of upstream tributary reservoirs to flood control on the Mississippi River. Farmers joined public power enthusiasts in championing multipurpose dams that would provide hydropower and irrigation water as well as flood control.⁶² Some of Hoover's mail, however, directly contradicted the assertions of the Midwesterners. *The Courier-Journal* of Louisville, Kentucky, bluntly reproached reservoir proponents: "Wild schemes for impounding waters at the heads of watersheds have proven as fallacious as they would be prohibitively costly."⁶³ Contradictory though some of his mail may have been, Hoover could not fail to understand the broad dissatisfaction with the Jadwin Plan.

In his sticky summertime courtroom in Monroe, Louisiana, Benjamin C. Dawkins, federal judge of the Western District of Louisiana, fueled the growing opposition. R. Foster Kincaid, a Boeuf Basin landowner of some 160 acres, brought into Judge Dawkins' court a suit that would eventually end up in the Supreme Court. He alleged that the water that would periodically breach the fuse plug planned for the head of the Boeuf Floodway would flow over his lands and destroy the value of his property—indeed, the value of his property had already drastically declined as a result of the announcement of the Corps' plans—and that both the U.S. Constitution and the 1928 Flood Control

Act provided for condemnation proceedings and payment by the United States for flowage rights.⁶⁴

The first issue that Dawkins decided was whether Kincaid had any standing to sue. Pressing for dismissal of the case, government lawyers had argued that Kincaid was not eligible for compensation since *additional* flood waters would not pass over his land, and that was the only justification for compensation stated in the flood control legislation. They further argued that, in fact, less water would flow over the plaintiff's land once the adopted project was completed, since the levees along the Mississippi River would be higher, actually offering more protection to land in the floodway than ever before. Finally, the government maintained that the awarding of contracts for construction of the Boeuf Floodway in no way constituted a taking of the plaintiff's land. Kincaid's complaints had to do with consequential damages such as the inability to sell his property or borrow money on it, and such damages caused by the government had long been considered to be beyond relief.⁶⁵

In August 1929, Judge Dawkins rendered his opinion. The government's defense did not convince him. Although the floodway would be little used, and generally the inhabitants would be better protected than before, sooner or later the floodwater would be directed into the basin: "When or how often no one save Providence can tell." The judge continued, "Would any one under such circumstances feel justified in placing improvements thereon of a valuable or permanent character, when he knew that at some time, by express design and inescapably, they would be destroyed by the great volume of water that is to be directed through these channels?"⁶⁶

Appealing to the Fifth and Fourteenth amendments of the Constitution, Judge Dawkins decided that the plaintiff did have a valid case for suing the Secretary of War, the Chief of Engineers, the district engineer, and the Mississippi River Commission. In a precious bit of understatement, the judge wrote:

One cannot help but be impressed that the [1928 Flood Control] act as finally passed was an unskilled compromise, first, between those claiming that the state should bear a portion of the burden as against others insisting that the government pay the whole cost; and, secondly, those demanding that all injury suffered by property owners in the floodways should be compensated, while others contended that the government should not be made responsible for anything

except property actually taken and to be occupied by the levees and other work contemplated by the project.⁶⁷

The judge's decision especially disturbed government lawyers because Dawkins clearly seemed to be leaning to the side of the plaintiff in his opinion, and that promised little good for the hearing on the merits of the case, which was also to be held in his courtroom.

The second hearing, held in October and November 1929, became somewhat of a sensation because of the inconsistent testimony of Army engineers. First, they testified that there would be no additional flooding of Kincaid's land. Then, upon cross-examination, they admitted that such flooding would occur.⁶⁸ Their confusion stemmed from the tortured reasoning the government used in its defense. Continuing the same argument they had broached in the earlier hearing, the government lawyers argued that before the closing of the Cypress Creek Gap more water on the average had inundated the Boeuf Basin than would be the case under the Jadwin Plan. Moreover, levees on the main stem of the Mississippi were to be raised approximately three feet, while the fuse plug levee would be maintained at its present height, which was high enough to contain any water below 60.5 feet on the flood gauge. Consequently, no protection was being taken away from the landowners. The problem was that, while future floods might come less frequently, they could be far greater than the earlier ones. The worst flood in the Boeuf Basin—that of 1927—had put 450,000 cfs through the basin. Under the Jadwin Plan, the Boeuf landowners were compelled to wait for potential floods between 900,000 and 1.25 million cfs. Consequently, the possibility of a severe loss would always be there.⁶⁹ Judge Dawkins concluded, "...the [flood control] act requires the government to pay for the rights which it seeks to exercise over plaintiff's property, and, in so far as the defendants are proceeding without complying therewith, they should be restrained."⁷⁰ On 4 February 1930, he enjoined the Corps of Engineers from further work on the Boeuf Floodway until it paid for flowage rights or acquired the land through condemnation.

The potential effects of Judge Dawkins' ruling were incalculable. It appeared that his ruling could apply to the Atchafalaya as well as to the Boeuf Basin, and that payment for flowage rights would be required in both, contrary to the Corps' contention. A similar case had involved John Kidder in the Atchafalaya Floodway. He had filed his suit just in time to convince the Corps not to award contracts for construction of parts of the Atchafalaya guide levees. However, it was the Kincaid case that the government chose to pursue. Federal attorneys took the case

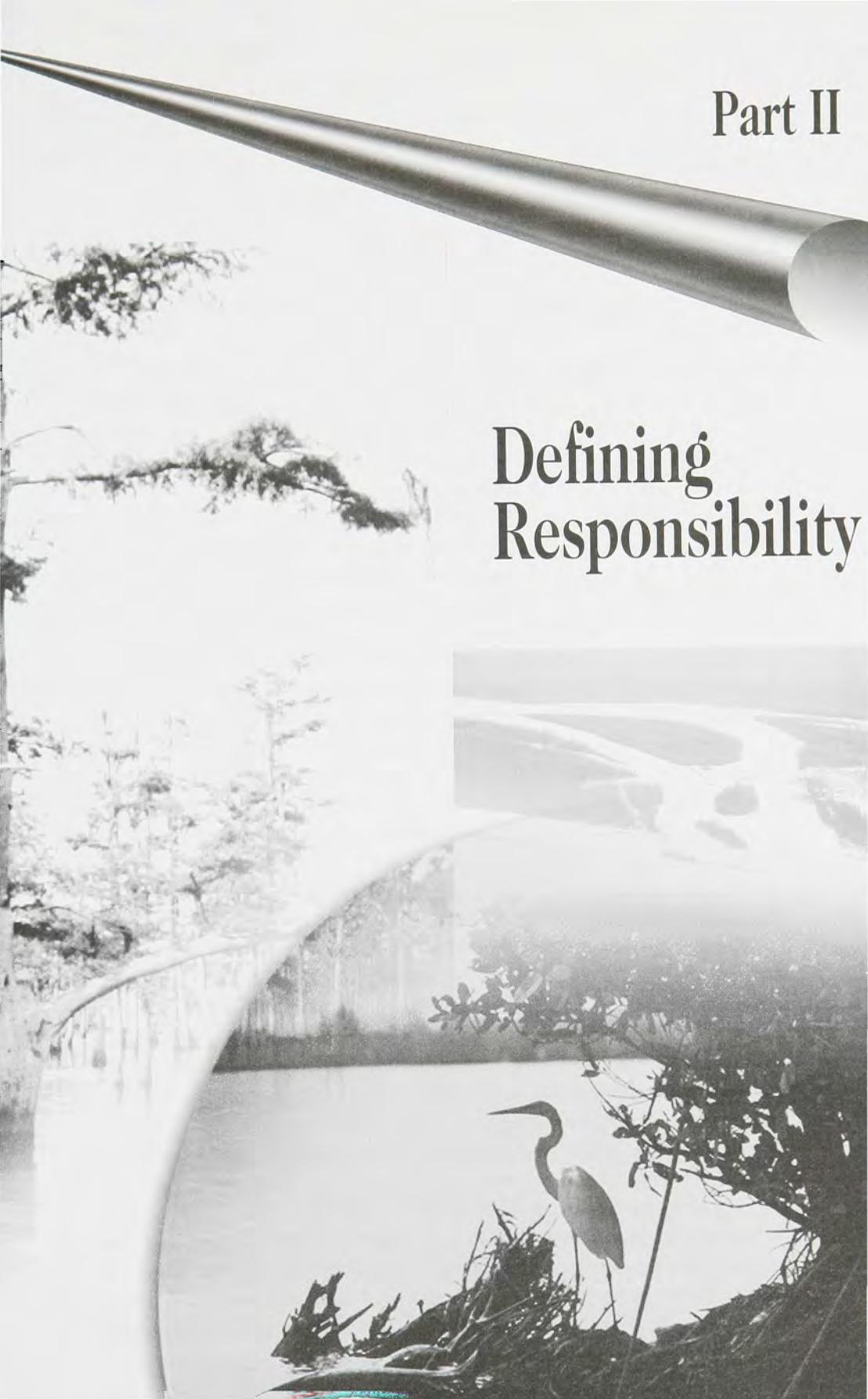
to the Fifth Circuit Court of Appeals, where, on 15 May 1931, Dawkins' ruling was upheld.⁷¹ Finally, in February 1932, the Supreme Court ruled that the injunction was inappropriate because Kincaid could file for compensation under existing law and "The Fifth Amendment does not entitle him to be paid in advance of the taking."⁷² Not having ruled specifically on the liability of the government, the Supreme Court left it to other courts to decide how much, if any, liability the government incurred. Meanwhile, political developments gradually were overtaking the wheels of justice.

Beginning in April 1929 and going into the following year, legislators threw at least a score of bills into the House or Senate hopper to clarify the language of the 1928 Flood Control Act. Several called for full compensation for flowage rights and rights-of-way regardless of location in the Mississippi Valley. Others, sponsored by people little impressed by the Corps of Engineers, called for the work along the Mississippi to be done by a new federal public works agency or, alternatively, a new, independent commission to replace the MRC. As each bill came to the attention of the War Department, the Secretary of War would state his objections.⁷³ Meanwhile, landowners and private engineers joined in voicing concerns about the Jadwin Plan. Dissatisfaction increased.

The Attorney General had ruled that the President could not modify or change the Jadwin Plan, but Hoover could delay its implementation, as Mississippi Valley politicians urged. Hoover hesitated for months before reaching a decision (perhaps also influenced by Judge Dawkins' August opinion). In mid-September 1929, he informally suggested he would postpone work on the controversial parts of the plan if congressmen from the Mississippi Valley desired it. Of course, they had said so the previous May, when they had presented their petition to the President. But more prodding was needed. Senator Ransdell, Arkansas Senator Joseph Robinson, and Arkansas Congressman W. J. Driver sent letters or telegrams advocating postponement.⁷⁴ Others presumably did as well. The editor of *Manufacturers Record* also urged delay.⁷⁵ Finally, in October, President Hoover announced the necessity for reconsidering "the floodway below the Arkansas," which meant both the Boeuf and Atchafalaya floodways. He decided to postpone construction in these areas until engineers could once more examine the Jadwin Plan and make further recommendations to Congress.⁷⁶

It was a difficult time to address such questions, however. In October 1929, the Depression began. Plummeting stock market prices laid bare the weakness of the economy. By the end of the year, millions

of investors had lost their life savings, and thousands of businesses had closed their doors. Many families, threatened with losing their homes because of the proposed floodways, lost everything anyway during the Depression. Yet, how could the federal government even construct the flood control project, let alone offer compensation, when faced with overwhelming economic havoc? Against this unhappy backdrop, Congress began work in earnest early in 1930, for it was clear by then that only Congress could resolve the issues. The President was tied to the Jadwin Plan, like it or not, and the courts could only enjoin action or offer remedies for damages. Constructive action required legislative answers.

A black and white photograph showing a bridge arch spanning a body of water. A heron stands on a small pile of debris or brush on the shoreline in the foreground. In the background, trees and foliage are visible along the riverbank.

Part II

Defining Responsibility

Chapter 5

The Politics of Engineering

THE TIMES CALLED FOR POLITICAL ADJUSTMENT, and no part of government went untouched. One might have predicted that the Corps' fortunes would rise in the administration of a President who was a former engineer. Engineers, Hoover had said, "comprise a force in the community absolutely unique in the solution of many national problems."¹ In the best Progressive tradition, the President sought to eliminate waste and increase production, goals that engineers could help reach and which the Depression urgently demanded. However, Hoover, the rational engineer, who supported national planning and stressed labor-management cooperation, could not be easily reconciled with Hoover, the social philosopher, who believed in American individualism, strict governmental limits, and the avoidance of direct government handouts. Hoover probably thought that Army engineers should, like their private counterparts, be the staunch allies of business.² Science and technology in support of business and industry was Hoover's prescription for the Depression. His was a technocratic state, which would give to properly trained experts the responsibility for providing cornucopia.

The President thought the way out of the Depression was through "voluntary cooperation in the community,"³ by which he meant the joint efforts of producers and consumers and of labor and management, but he did support public works projects as a way of supplying employment.⁴ Depression concerns aside, Hoover wished to secure only the most competent officials to supervise large engineering projects, and he desired that these officials remain at their posts for several years rather than periodically being transferred to other positions.

In this grand scheme, the Corps' role troubled Hoover. One source of discontent was eliminated in August 1929, when Major General Lytle Brown replaced Jadwin. The new Chief of Engineers, less doctrinaire and more politically astute than his predecessor, was needed to lead the Corps through the shoals of political controversy generated by the Jadwin Plan. Perhaps more important from Hoover's point of view, Brown had the skill to reorganize the Corps to enable it to execute public works projects efficiently—an increasingly significant

issue as the Depression settled in to hound Hoover's entire administration.



Major General Lytle Brown (1872–1951) was the Chief of Engineers from 1929 to 1933.

In accordance with the President's wishes, in September 1929, a month before the Depression's onslaught, General Brown announced the reorganization of various Corps districts and divisions. The plan called for eight divisions, each headed by a senior officer, the division engineer. However, only the Lower Mississippi Valley Division was headed by a general officer; the others were headed by colonels or lieutenant colonels. General Brown delegated substantial authority to these division engineers as Hoover desired.

The divisions followed hydrologic boundaries, reflecting the Corps' (and Hoover's) preoccupation with civil works duties. Equally important, again as Hoover instructed, the new system enabled division engineers to remain in their positions for several years, ensuring some consistent administration of public works projects.⁵ Under this system, Brigadier General Harley B. Ferguson, who succeeded Jackson as head of the Lower Mississippi Valley Division and president of the Mississippi River Commission, stayed at his post for over seven years.

Hoover faced another and arguably more difficult problem relating to the Corps: tying the loose ends left by the Jadwin Plan, especially the troublesome and politically volatile areas of flowage rights and levee rights-of-way. By the beginning of the new decade, engineers, politicians, and Mississippi Valley farmers had all concluded that the Jadwin Plan needed drastic surgery. President Hoover decided to force the issue. Although unable to change the Jadwin Plan without congressional support, he authorized a study to recommend possible modifications. It seemed "desirable to have a study of Lower Mississippi flood control made," he wrote Secretary of War Patrick J. Hurley at the end of 1929 and, being both an engineer and a politician, he did not hesitate to suggest the principal issues the study ought to address—

1. Handling the maximum of the 1927 flood [instead of the larger, so-called "super flood"].
2. Abandon the Floodway from the Arkansas as far as the Atchafalaya.
3. Improve the Atchafalaya floodway by higher levees but a narrower floodway than that provided in the Jadwin plan, and with view [*sic*] simply to the ample protection of New Orleans and the Bonnecarrie [*sic*] spillway.
4. Strengthen the levees on the river from the Arkansas River down.
5. Exhaustively study the question of reservoirs of the Upper Arkansas, Red, White, and other streams.⁶

The issues raised by the President leave little doubt that he wanted to eliminate as many real estate issues as possible to allow progress on construction (and provide jobs). Probably, Hoover also had philosophical qualms about the government getting so deeply into the real estate business. Reducing the size of the theoretical flood against which protection should be provided, raising levees and narrowing or eliminating floodways, and studying alternative flood control methods such as reservoirs might provide satisfactory political responses. Whether they were equally satisfactory from the engineer's point of view was the great question, and one that Hoover, the engineer, could certainly understand.

Hurley passed Hoover's note to General Brown. Under Brown's direction, the Corps worked for over a year gathering a massive amount of data to answer the questions. By the time Brown answered, he was responding as much to congressional as to presidential inquiries.

The Critics and the Corps

THE FORMAL BEGINNING of the long process of congressional revision began on 10 February 1930, when Chairman Frank Reid called the House Flood Control Committee to order. The time was auspicious. The Corps had a new commander, the Kincaid case on land damage payments had led to a court injunction against construction of the Boeuf Floodway a few days before, and Mississippi Valley politicians had received scores of petitions and letters asking for redress. The editors of *Engineering News-Record* were the most optimistic they had been for over a year. Long opposed to the Jadwin Plan, they now saw an opportunity for real change: "The present hearings are but the

opening gun of a campaign that will extend over many months. It will not delay work, for the main river will easily absorb all construction energy for some years. But its conclusion, according to present promise, will see a sounder project adopted."⁷ The editors were right. The project would be revised, but the revisions would take years, not months, and would result in an imperfect reconciliation of federal, state, and local concerns. The modifications attempted to harmonize political demands with technological and engineering capabilities. Success here depended on point of view. Initially optimistic, engineers became more cautious in their predictions in succeeding decades as the fragile hydrologic and ecological structure of the basin came to be better understood.

At the opening of the Flood Control Committee hearing, Congressman Reid bluntly criticized the Corps. He noted that when Congress passed the 1928 Flood Control Act:

every member of the committee felt that the engineering plan was not sufficiently comprehensive, but in view of the attitude of the administration and certain other individuals, it became advisable that the bill be passed with certain features in it that probably nobody thought were well founded on engineering and scientific principles.⁸

As for the Corps, Reid explained that "for some inexplicable reason the Army was not able to agree upon the bill as it was written" thus causing confusion among citizens of different states along the Mississippi demanding to be paid for flowage rights. "Of course," Reid pointedly said, "every time my views have been requested on this matter, I have explained that it was definitely settled by the fight on the floor, led by Mr. Tilson, on his amendment—his idea being that the Government should flood the land and then let it go to the courts afterwards."⁹

Flood control committee members shared Reid's desire for a new engineering plan, although they differed over particulars. Discontented politicians, engineers, sheriffs, and levee district personnel paraded before the committee to suggest this or that modification. John Klorer was among the first to testify. With the protection of New Orleans uppermost in his mind, he voiced support for constructing both the Caernarvon and Bonnet Carré spillways—something that had been recommended by the Corps of Engineers Spillway Board.¹⁰ Harry Jacobs, the chief state engineer of Louisiana, presented a far more encompassing plan developed by his Board of State Engineers. However, he admitted that much of the plan would be thrown into

question should the Corps' ongoing study contradict the state's conclusions.¹¹

Louisiana had initiated statewide flood control planning in January 1929, when Governor Huey P. Long had established a Louisiana Flood Control Committee. The committee had immediately requested the five-man Board of State Engineers to study the various reports of the Army engineers and the MRC and to submit a report to the committee giving criticisms and recommendations. The board finished its work by the fall of 1929 and sent its report directly to Governor Long on 30 November.¹²

The plan relied heavily on the report prepared by the Corps of Engineers Reservoir Board, a seven-man committee of Army engineers which General Jadwin had established after the 1927 floods to report on the effect of reservoirs on Mississippi River flood control. The committee's findings had been integrated into the Jadwin Plan. There were two principal conclusions. First, reservoirs at the headwaters of the Mississippi River would cost much more than levees on the main stem of the river but would give no more protection. Second, an 11-reservoir system on the White and Arkansas rivers was the most promising system of all those studied despite the fact that its costs far exceeded its benefits. Therefore, the committee recommended that no reservoirs be constructed. In its words, "The Chief of Engineers [Jadwin] has outlined a project to care for the maximum future flood by a combination of levees, spillways, and flood channels..., which is far cheaper than any method the board has been able to devise for accomplishing the same result by any combination of reservoirs."¹³ The committee noted that the 11-reservoir system would halve the amount of water going through the Atchafalaya and Boeuf floodways; but "this would not permit any material reduction in the cost" of the floodways. It would, admitted the officers, "permit reclamation of considerable additional land in the floodways and backwater areas at the mouths of the Arkansas and Red Rivers." However, they concluded that the benefits of such a system would not exceed \$75 million, while the cost would be approximately \$242 million.¹⁴

This report was controversial from its first appearance. Colonel William Kelly, who headed the reservoir committee, had left the Army to become vice president of the Buffalo, Niagara and Eastern Power Company. Like many other private power companies throughout the United States, Kelly's company believed that private interests, not the federal government, should develop the nation's rivers. In and out of Congress, people suspiciously viewed a report that dovetailed so neatly with the interests of the private power producers. Moreover, engineers

and politicians skeptically received a report completed in less than six months that purported to cover all the reservoir sites in the Mississippi Valley.¹⁵

The controversy surrounding the reservoir committee report, and the desire of the Louisiana Board of State Engineers to ensure maximum protection for their state, made it unlikely that the Louisiana and Army engineers would agree. The state board enthusiastically embraced the proposal for an 11-reservoir system. At the same time, the board recommended that the Jadwin Plan "be discarded, as far as it applied to southeast Arkansas and to Louisiana; and, that a different plan be recommended for substitution."¹⁶ The state engineers proposed the construction of a controlled spillway above Old River that would accommodate some 865,000 cubic feet of Mississippi River water. Echoing a proposal from the earliest days of the Mississippi River Commission, the state engineers' report called for a lock to be built above the spillway to connect the Mississippi with the Red River, a distance of a little over 2.5 miles. The combination of reservoirs and the spillway would then obviate the necessity for the Boeuf Floodway. Speaking for his fellow engineers on the Board, Jacobs also recommended increasing the freeboard on the entire levee system from one foot to three feet to provide greater protection.¹⁷

Both the Jadwin and the Louisiana engineering plans were designed to accommodate a 3 million cfs super flood, but in very different ways. The state engineers calculated that the reservoirs would accommodate 380,000 feet and the spillway another 865,000 feet. The Atchafalaya River would carry the water from the spillway, together with a maximum 255,000 feet from the Red and Black rivers, for a maximum total of 1.12 million cubic feet going down the Atchafalaya, compared with 1.5 million feet proposed in the Jadwin Plan. To prevent Mississippi River water from going into the Atchafalaya through Old River, Old River would be dammed and leveed—the State Board of Engineers had been advocating that for years. Without apparently taking inflation into account, the Louisiana engineers accepted the 1913 MRC estimate of \$1.5 million for constructing Old River dams and levees, adding just 10 percent because of "different conditions and requirements for flood protection from those of the year 1913."¹⁸ They also recommended eliminating the East Atchafalaya Floodway in the upper Atchafalaya Basin, north of Bayou Alabama, and confining the floodway between the West Atchafalaya guide levee and the levee east of the Atchafalaya River. Below Bayou Alabama, the entire basin would be used as the floodway. A controlled spillway would be built in the

West Atchafalaya Floodway in place of the fuse plug levee proposed by Jadwin.¹⁹

The plan had major drawbacks. It raised the cost of lower Mississippi flood protection from the \$325,000 authorized for the Jadwin Plan to over \$700,000, or very nearly what had been estimated by the Mississippi River Commission. Moreover, under some intense questioning from Congressman William "Will" M. Whittington, a Democrat from Mississippi, Jacobs admitted that the plan would result in more backwater in the Yazoo, St. Francis, and other rivers farther upstream on the Mississippi. Additionally, Jacobs had no firm figures on the cost of the land to be dedicated to the reservoir system and admitted once more that the state plan would have to be revised should the Army engineer report under preparation significantly modify available data.²⁰

For good reasons, most Louisiana residents preferred the state's plan to the Army engineers' plan. It eliminated one floodway and limited potential property damage in the Atchafalaya Basin. However, support was not universal. Wade O. Martin, testifying before the House Flood Control Committee on behalf of the Atchafalaya Basin Levee Board, favored a floodway that could handle 1.5 million cfs, as recommended by General Jadwin. The explanation for his position was interesting. He revealed that during the 1927 flood, persons in St. Landry Parish had repeatedly cut levees farther south, believing that those levees were causing increased flooding in their area. No amount of pleading or reasoning could convince them that Atchafalaya Basin levees did not contribute to their distress. Believing change in human nature unlikely and future crevassing of Mississippi River floodwater certain, Martin proposed two modifications to whichever plan was finally implemented in the Atchafalaya Basin. First, Kemper's idea of a floodway out to Vermilion Bay ought to be investigated. By using Bayou Teche and the Vermilion River, engineers could divert a substantial amount of water around the Atchafalaya Basin. Second, the lower Atchafalaya River should be dredged to allow the river to carry more water.²¹

If opponents of the Jadwin Plan thought the Army Corps of Engineers would throw out the plan just because Jadwin had left office, they were severely disappointed. Major Holcombe, the New Orleans District engineer, argued that the plan was the best conceivable. In fact, he admitted that he would have personally opposed building the protection works if the government had been compelled to pay for all the land and flood control works involved in the Jadwin Plan.²²

Holcombe's point of view illuminated the Corps' traditionally conservative approach.

General Brown was more circumspect, however. He thought the Jadwin Plan could be improved and hoped that the restudy would provide necessary direction. "The Jadwin plan," he testified, "was a piece of emergency work. In fact I regard the whole work down on the Mississippi River as emergency work in order to get something done to protect those people there."²³ Brown thought the Jadwin Plan "a wonderful result in the time in which they had to do it.... I do compliment General Jadwin for having jumped in individually and pushed all opposition out of the way and produced something."²⁴ Chairman Reid replied, "He certainly did push opposition out of the way. We will have to give him credit for that."²⁵

On one significant issue Brown completely sided with Jadwin. He argued that uncontrolled diversions should be used in both the Atchafalaya and—if built—Boeuf floodways, just as Jadwin had proposed. Brown particularly emphasized the necessity of an uncontrolled diversion through the Atchafalaya Basin, although he conceded:

No man can tell what the Atchafalaya diversion will ultimately come into until he sees it. There is a possibility that when a good opening is made all the way from the mouth of the Red River to Morgan City that there will be a tremendous rush of water through the Atchafalaya diversion and when there is such a thing it may be very desirable to choke it off at the head.²⁶

One thing was clear. The Louisiana proposal held no appeal for General Brown. He did not see the value of some of the works Jacobs suggested and was particularly disturbed that the plan would allow "probably poor ignorant people" to settle in backwater areas subject to flooding.²⁷ Brown's position hardly deterred Jacobs. To the Atchafalaya Floodway Subcommittee of the House Flood Control Committee he reiterated support for the state plan, still based on the assumption that the 11 reservoirs would be built. However, at the subcommittee's request, the state board, no doubt with some distress, addressed the possibility that the 11 reservoirs would not be built at all. Eliminating the 11 reservoirs would force the use of both the Boeuf and Atchafalaya floodways, which, according to Jacobs, "is more than regrettable. It is positively awful to contemplate, and should not be countenanced except as an unavoidable necessity."²⁸

On 4 March 1931, Secretary of War Hurley sent the Corps' 1,500-page restudy to Congress. Perhaps the most important Atchafalaya

Basin question it analyzed was whether flood protection equal to that provided in the Jadwin Plan could be obtained by narrowing the floodway but raising the protection levees. Less land and property would be sacrificed, but the engineering and economic challenges were formidable. The basin's swampy soils could not support the very high levees necessary to accommodate the same amount of floodwater. The Corps could reduce the required levee heights by clearing the trees out of the narrower floodway. Engineers calculated that a cleared basin could carry three times more water than an uncleared one. Yet, clearing land and keeping it clear required more money. Moreover, while levees for the narrower, cleared floodway would not be as high as for an uncleared floodway, they would still be higher and costlier than those anticipated for the floodway in the Jadwin Plan, particularly with the inclusion of necessary additional drainage channels. Thus, while building a narrower floodway appealed to both engineers and basin residents, General Brown did not recommend it because of the cost.²⁹

Brown also addressed the controversial issue of building fuse plug levees at the head of both the Atchafalaya and Boeuf floodways. Mississippian Charles H. West, a member of the Mississippi River Commission, had registered his opposition to fuse plugs in late 1929 because he thought it would be difficult to compute the amount of water actually flowing through them in the event of flooding. He advocated instead the construction of more expensive fixed masonry weirs.³⁰ Although alone in his views on the commission, he reflected the views of many Atchafalaya Basin residents, while the Louisiana Board of State Engineers desired a controlled spillway some 14 miles above Old River on the Mississippi to divert floodwater into the Atchafalaya Basin.³¹ In his report, Brown admitted that fixed weirs might be substituted for fuse plugs if the issue of consequential damages could be resolved and if the weirs could be economically justified.³² Subsequently, he directed General Jackson, then commanding the Lower Mississippi Valley Division, to ascertain the practicability of building—

1. Concrete weirs in both basins.
2. Concrete weirs with movable weirs in the center where the amount of water diverted could be adjusted.
3. Channels through the floodways that would serve as drainage channels at first but through natural and mechanical (dredging) enlargement would eventually serve as floodways by themselves.³³

Jackson turned to Colonel John N. Hodges, the Second New Orleans District engineer, for help. Under Hodges' supervision, the district analyzed the desirability of building a fixed weir on the east side of the Atchafalaya, a movable weir on the west side, and a channel below the weirs to carry most of the floodwater.³⁴ Hodges concluded that neither weirs nor a new channel were cost-effective or necessary, and he affirmed the Corps' reliance on fuse plugs and a relatively wide floodway.³⁵ As long as the fuse plugs remained in the flood control plan, controversy continued.

To the surprise of many engineers, and the outright consternation of Jacobs and the Louisiana board, the Corps' revised plan basically reaffirmed Jadwin's conclusions. The original project was economically justified, but the 11 reservoirs on the Arkansas, Red, and White rivers were not. Although the reservoirs would reduce floods below the mouth of the Arkansas and allow the elimination of the Boeuf Floodway, their cost still outweighed benefits. To objections to the construction of the Boeuf and Atchafalaya floodways, the report responded that the floodways "make a virtue of necessity," and "all who have examined the approved project agree that a floodway through the Atchafalaya can not be avoided except by a general application of a system of reservoirs to the entire watershed of the Mississippi."³⁶ Finally, the report also reaffirmed the Corps'—though not Congress's—position that nonfederal interests should provide all rights-of-ways and flowage rights except where the federal government had specifically agreed to acquire the rights or already had.³⁷

The Louisiana Board of State Engineers became increasingly vocal in its protests against the Corps. In a mid-1931 "Flood Control Bulletin"—nearly 14 single-spaced, legal-sized pages of outrage—the board accused the Corps of knowing that the true cost of the Jadwin Plan would be "several times" the \$325 million authorized by Congress, but to avoid embarrassment the Corps had "apparently resorted to strange methods of arriving at the...economic justification of the project."³⁸ Jacobs was so disturbed by the report that through the assistance of Congressman Riley Wilson he obtained an audience with President Hoover in March 1931 to present the state plan and attack the Corps' proposals.³⁹ We may assume that Hoover attentively listened, but, being a politician as well as an engineer, he deferred to the political process unfolding in congressional hearings.

The Corps' report addressed the two issues that shaped all subsequent developments in the Atchafalaya Basin. The first was land—how much was needed and who was to pay for it? The second centered on the constraints on engineering design, construction, and

maintenance. Resolving both issues required political skill and engineering expertise. Politics dictated that floods in the Atchafalaya Basin be confined to the narrowest floodway realistically conceivable. While building higher levees did not seem either economically or structurally viable, dredging the river raised hopes of increasing the Atchafalaya's carrying capacity, thereby lowering flood heights and reducing the time that the water was over the banks. In the early 1930s, therefore, a series of dredging experiments began that transformed the terrain of the Atchafalaya Basin.

Dredging

IN THE 1920S, THE UPPER ATCHAFALAYA RIVER had increased its carrying capacity 37.5 percent according to various engineering studies. This resulted mainly from the construction of levees along the upper 54 miles of the river. Once the levees were in place, the river broadened and deepened itself, and the current increased. In the 1927 flood, the river alone carried around 500,000 cfs. The problem was that the 70-mile lower stretch of the Atchafalaya River was actually a braided network of bayous, lakes, and swamps. When water from the upper river descended on this lower reach, its current decreased and it deposited much of the sediment it carried—the more water in the upper Atchafalaya, the more sediment in the lower regions—congesting the lower river and raising flood heights. The Corps estimated that flood heights had increased two feet just from 1929 to 1932. Because there was little slope to the Atchafalaya on the way to the Gulf of Mexico, any dredging was bound to be a temporary expedient; the lakes and bayous would inevitably fill up again. Instead, Wade Martin suggested dredging a new channel that would bypass some swamps and lakes and take advantage of others. He thought that such a channel would naturally increase in size and carry more water.⁴⁰

The foremost proponent of dredging within the Corps was Colonel Harley B. Ferguson, a member of the Board of Engineers for Rivers and Harbors. In November 1930, he wrote a long memorandum to the board expressing his support for dredging the Atchafalaya. "There can be no possible harm in such control," he wrote. "This control [dredging] is an essential part of a synchronized plan for accelerating those actions of the river that are favorable to our purpose."⁴¹ Borrowing an idea suggested to the board by Louisiana engineers at a New Orleans hearing and similar to Martin's proposal, Ferguson advocated dredging

a channel through the sand deposits above Grand Lake, the wide part of the Atchafalaya lying above Morgan City.⁴²

General Brown did not fundamentally disagree with the dredging proponents, but he feared that the 1928 Flood Control Act did not empower the Corps to do any dredging in the Atchafalaya Basin or, for that matter, to do anything on the Mississippi and its tributaries beyond what was explicitly authorized. Only after the House Flood Control Committee passed a special resolution on 28 January 1932 did Brown believe he had the authority to go ahead and experiment. The resolution asked the Corps to "examine and review...the engineering features of the project [authorized in 1928]...with a view of determining if changes or modifications should be made in relation to the project and its final execution." Thus, in October 1932, the Corps of Engineers began dredging the Atchafalaya River. It continued intermittently until 1968.⁴³

The dredging was at first termed "experimental." Army engineers were uncertain that dredging could economically improve the Atchafalaya's carrying capacity or that it could be done in a reasonable length of time. They decided initially to carve out a 20-mile low water channel along the lines proposed by Martin and others (and thought unnecessary earlier by Colonel Hodges). It would begin just south of where the Atchafalaya was leveed, continue around some of the swamplands (where the river lost both velocity and sediment), and return to the main Atchafalaya channel north of Grand Lake. At first, three dredges worked on the project, but the operation rapidly expanded to include five pipeline dredges, five bucket dredges, and four agitator dredges, some of which worked only part-time. In 1932–33, the dredges cut out three connecting channels, including a 4-mile cut east of Butte la Rose that shortened the river by about 2.5 miles.⁴⁴

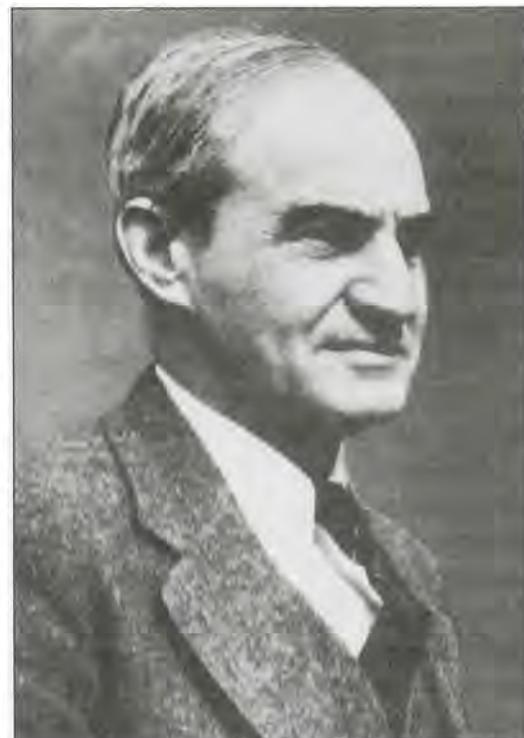
Meanwhile, Ferguson was promoted to brigadier general and named engineer for the Lower Mississippi Valley Division in June 1932. At the same time, he became president of the Mississippi River Commission. With both engineering and political skills, he was ideal for the position, and he left a lasting imprint on the development of the Mississippi River and its tributaries.

Ferguson arrived in Vicksburg with a distinguished record. After graduating seventh in his class at West Point in 1897, he became chief engineer for American forces in the China relief expedition (1900–1901) while still only a first lieutenant. He obtained his first civil works experience as the assistant to the district engineer in Montgomery, Alabama. In 1910, he supervised the raising of the battleship *Maine* in Havana Harbor, a special assignment which showed the trust his

superiors had in him. He then worked in engineer districts in Milwaukee and Boston, commanded the 105th Engineers in France during World War I, and headed the Pittsburgh Engineer District after the war. Later, he commanded the Gulf, Central, and South Atlantic divisions successively.⁴⁵

In Vicksburg, Ferguson's interest in dredging heightened, as revealed by a number of memorandums he wrote.⁴⁶ In one the general neatly defined the engineering problem: through dredging cutoffs and other river improvements, the Corps wished to gain the ideal river velocity that would transport the maximum amount of material without scouring the banks on one hand or depositing sediment on the other. Theoretically, once this ideal was met, only minimum dredging would be required in the future.⁴⁷

Ferguson once claimed that his ideas on the use of dredges came as a young boy in western North Carolina, when he watched what happened after someone with a mule and plow tore up part of Raccoon Creek on his father's farm in Haywood County. He saw the river's force as it established a new channel. Years later, the incident helped convince Ferguson that the Mississippi River must be allowed to make efficient use of its energy. "Put it to work," the general said. "Keep it from damaging its banks and make it carry the load in its bed." By creating cutoffs, he increased the flow of the river, helped it to increase its load-carrying capacity, and diverted the river's energy away from eroding its banks to eroding its bed. Energy applied in this manner equaled the power of a fleet of dredges. Ferguson's objective was similar to Eads' goal: help the river deepen its own channel. However, Ferguson, depending on modern



Brigadier General Harley Bascom Ferguson (1875–1968) is shown here in civilian clothes. He was president of the Mississippi River Commission and the division engineer of the Lower Mississippi Valley Division from 1932 to 1939.

dredges, focused more on cutoffs and less on eliminating outlets. Commonly dressed in civilian clothes—division engineers did not normally wear their uniforms in pre-World War II days—and smoking an old charred, black pipe, Ferguson easily charmed those around him.⁴⁸ And the eventual success of his dredging program on the Mississippi seemed ample proof of his engineering capability.

However, the Atchafalaya resisted dredging more than the Mississippi did. Pockets of stiff clay, probably deposited by the Red River, which had once flowed through the area, slowed progress. The Atchafalaya had not been able to cut through the clay, but once the dredges did, Ferguson optimistically told Congress in March 1933, the river would be able to keep the cut clear.⁴⁹ A year later, although the channel work was hardly complete, Ferguson brought the experimental dredging to a conclusion and proclaimed its success to Congress. It showed, he testified, that dredging the river increased its capacity and accelerated its enlargement and that both could be done economically and within reasonable time.⁵⁰



The Corps of Engineers' pipeline dredge *Wahalak* working in the Butte La Rose cutoff, Atchafalaya Basin, 1933.

Ferguson's optimism masked some real problems. The experimental dredging had taken place on an experimental river, geologically speaking, one that formed and re-formed, cutting new channels and abandoning old. While touting the success of dredging a low water main channel, Ferguson began to doubt that one channel would be adequate to carry the flood contemplated in the Jadwin Plan. He directed the recently established Waterways Experiment Station at Vicksburg to do some three-dimensional modeling. Results from these experiments, as well as from the actual dredging taking place on the river, convinced the general by early 1934 that an efficient flood control plan required three additional channels through the middle third of the swamp.⁵¹ These channels would flatten the slope of the river in the middle segment, "which will lower the water surface at the lower end of the upper third and should result in more rapid development of the Atchafalaya River in the upper third by increasing the average slope."⁵² The net result would be to increase the river's flow capacity and, not inconsequentially, provide alternate navigation channels. Although hampered by funding constraints and unsure of the exact effects on flood carrying capacity, Ferguson initiated his plan.

Ferguson's Four Channels

Channel No. 1	Atchafalaya River to Butte La Rose, Grand River, Little Atchafalaya, Bayou La Rompe, Lake Long to Grand Lake. This channel was to be the main low water channel.
Channel No. 2	Atchafalaya River to Butte La Rose, Grand River, Cow Island Cut, Bayou La Rompe (later Big Tensas), Splice Island Chute, Bayou Chene Cut to Lake Chicot.
Channel No. 3	Butte La Rose Cut, Whiskey Bay, Grand River, Blind Tensas Channel, Lake Mongoulois, Bayou Chene Cut and/or Jakes Bayou to Lake Chicot.
Channel No. 4	Whiskey Bay, Grand River, Cowpen—Little Tensas Cut, to the swamp east of Little Tensas.

Source: Ferguson memorandum, Vicksburg, Mississippi, 16 February 1934, Box 87, Accession 76A-1429, Record Group 77, Fort Worth Records Center, National Archives and Records Administration.

Ferguson's initiatives considerably expanded human intrusion in the Atchafalaya Basin. The mixture of human activity and dynamic natural development continuously transformed the basin's terrain. Consequently, names that may have accurately described natural features one year might not the next. For instance, some streams might resemble lakes, and some lakes looked like streams. No matter, in ten years their appearance could be entirely different. Ferguson noted to a congressional committee that "it is the most wonderful mixture or bunch of names any one has ever known through there."⁵³ While the shifting geography no doubt perplexed politicians and others trying to understand the basin, the problem was more than just an academic challenge. In Louisiana, riparian landholders owned title to accretions of their land in streams or rivers, but the state retained title to accretions formed in lakes. When gas and oil companies began laying claim to patches of the swampland, the definition of "stream" and "lake" led to numerous lawsuits. Lawyers, geologists, and hydraulic engineers rarely agreed on what was what, but millions of dollars rested on the final determination.⁵⁴

Congress was content to let Louisiana calculate the vices and virtues of its real estate law, which kept Congress out of a legal thicket and obviated any necessity to master the topographical complexity of the basin. Rather, congressmen deferred to the expertise of the Corps of Engineers. Following Ferguson's lead, Congress no longer considered the Atchafalaya dredging "experimental," despite continuing evidence to the contrary. At one point, the Corps apparently did not even agree on how many "main" channels it was dredging. The 1934 *Annual Report of the Chief of Engineers* noted that the Corps was dredging three main channels through the swamp section, but that was the only year such a report was printed.⁵⁵

Subsequently, the annual reports agreed that the Corps was building one main channel. As the Corps dredged out new channels and cutoffs, it periodically returned to dredge old spots. Like an unruly child, the stream just refused to behave as the adults wished. Progress came, but it took substantial time and equipment. In 1938–39, the Corps' busiest pre-war year on the Atchafalaya, Army engineers used 17 dredges on the river, including 2 leased dredges, 13 contractor dredges, and 2 government-owned floating dragline machines.⁵⁶ Many of these dredges were pipeline dredges. Using suction pumps, the dredges took material from the banks or bed of the river and forced it through a long pipe to be deposited in backwater areas. Engineers thought that the dredge "spoil" spouting out of the pipes might confine the stream flow and increase carrying capacity. Ferguson thought that

the dredge deposits could even “aid in the direction of flow of the main stream.”⁵⁷ A 1932 unsigned memo—possibly written or at least inspired by Ferguson—from the Lower Mississippi Valley Division went further: “Where not needed for confinement of flow the spoil would probably be wasted in the adjoining swamps, somewhat to the advantage of the swamps,”⁵⁸ implying that somehow the swampland’s salvation could be found only in its obliteration.

Although the Corps pressed its dredging program as much as congressional appropriations permitted, Louisiana engineers fretted about the speed of execution and urged the Corps to accelerate operations. Meanwhile, the Board of State Engineers encouraged the completion of levees along the banks of the river, “employing a slow construction program” that would “make use of the kinetic energy of the stream, when in flood, to scour out its own channel as desired.”⁵⁹ Few engineers expressed doubts about mastering the Atchafalaya given sufficient time, machinery, and money.

In the middle and late 1930s, the dredging program expanded. It aimed to cut a channel some 40 feet deep through the entire basin. At the same time, the Corps closed distributary bayous to increase the flow of water in the main channels. In 1935–36, Bayou Courtaleau, the lower end of Alabama Bayou, and Indian Bayou were all closed. The Corps dredged about ten miles of Chicot pass from 1935 to 1937 to provide year-round navigable depths and to transport sediment more efficiently. It dredged the Whiskey Bay Pilot Channel, part of the main Atchafalaya channel, in the years 1934 to 1937. The natural slope here was relatively steep, letting the pilot channel efficiently transport sediment from the upper third of the Atchafalaya. However, this sediment movement also partially negated Ferguson’s efforts to build



The Corps of Engineers' *Lake Fairfax* dredges in Whiskey Bay, Atchafalaya Basin, 1933.

a flatter slope through the middle third of the river and to increase the slope of the leveed section of the river. Instead, the upper third of the river transported almost its entire sediment load to the pilot channel. No longer could the sediment exit through distributary channels or be distributed laterally during high water as was possible before levees were constructed. The result was that the slope of the upper third of the river flattened even further. By 1940, its discharge capacity seemed to be stabilizing. In engineering lingo, the upper third appeared to be reaching "channel maturity."⁶⁰

However, the Corps' activities accelerated sedimentation in the lower third of the basin, the Grand Lake area. Already, in the years between 1916 and 1930, Grand Lake had lost 80 square miles of water surface, a reduction of 46 percent, the result of both natural accretion and accretion resulting from levees—all built before 1912—cutting off natural water inlets and drying up the land. With the Corps' channelization activities, more dry land appeared, or, more accurately, was dumped upon Grand Lake. The dredging in the 1930s removed 100 million cubic yards of earth, causing both more water and more sediment to enter the Grand Lake area. The difference was that the water eventually left; much of the sediment stayed. Between 1930 and 1952, 60 square miles of new land appeared within Grand Lake and its immediate neighbor to the south, Six Mile Lake.⁶¹ In 1940, Gerard H. Matthes, the principal engineer for the Lower Mississippi Valley Division, thought—quite justifiably as it turned out—that Grand Lake was "going into obsolescence at a rapid rate" and that sedimentation would also result in land accretion and the blockage of natural drainage channels in the estuarine region below Morgan City.⁶² His analysis did not embrace potential impacts on crawfishing, crabbing, and the burgeoning Louisiana shrimp industry.⁶³ No matter whether Grand Lake was a lake or just a wide part of the Atchafalaya before, by 1950 it hardly even qualified as a stream. Rather, it had become an intertwined network of waterways and lumps of land that disappeared and appeared in accordance with the changing seasons and the manipulation of engineers.

Some engineers in the Corps actually saw advantages to the siltation. Indeed, the same engineer who had written of the advantages of dredge spoil in the swamps suggested that protecting Grand Lake was unwarranted and possibly not even desired by local residents "since its future utility from an agrarian standpoint would seem to depend upon an increase in elevation by accretion."⁶⁴ He would no doubt have been surprised by the dismay of one Atchafalaya Basin resident in the late 1970s, who exclaimed, "Lord, how this swamp has changed! Years

back I could stand on the shore of Grand Lake and barely see across to the other shore. Just open water. Why that lake was so big they had to have lights to guide the boats. Now it ain't nothing but willer bars and silt."⁶⁵



1917



1940



1951



1972

Four maps show the gradual land accretion in Grand and Six Mile lakes.

Despite occasional funding lapses, floods, and natural obstacles, the Corps reviewed its progress with satisfaction. By 1940 the flood-carrying capacity of the river had increased an estimated 42,000 cfs at a gauge height of 41 feet. At this point Matthes thought that dredging should be limited to "removal of obstructions and shoaling in the unleveed navigable channels, including the navigation channel across Grand Lake."⁶⁶ This is what the Corps called "corrective dredging." Enlarging the Atchafalaya's channel capacity further would require an increased diversion of Mississippi River floodwater into the Atchafalaya, and this, wrote Matthes, would necessitate "large-scale dredging operations and probably levee set-backs." Such projects would be expensive.⁶⁷ Following Matthes' recommendation, for the next few years the Corps confined its work to corrective dredging to maintain the Atchafalaya's carrying capacity.

No matter what the dredging strategy was, the silty, deep waters of the Atchafalaya remained a formidable challenge to dredges and engineers alike. To maintain the channel, dredges spouted black clay into areas beyond the banks and levees. Among the hundreds of Corps of Engineers documents dealing with Atchafalaya dredging in the 1930s, none discuss the negative effects of this dredge spoil on the fish and wildlife of the basin. No one expressed concern about the impact on water quality or the effect on the commercial fish industry. There seemed little concern about cutting off access to hunting and fishing holes or threatening traditional life styles. While the Corps agreed that excessive siltation threatened young timber, it explicitly denied charges by commercial timber interests that the flood control project had increased siltation beyond what had existed before 1928. Indeed, Corps officers argued the reverse; clearing and enlarging channels tended to prevent siltation in the timbered areas.⁶⁸ On the other hand, the Corps did concede that the construction of the West Atchafalaya Basin Protection Levee had cut off the supply of water at the head of Bayou Teche, thereby adversely affecting rice irrigation along Bayou Teche and the Vermilion River. Various ways were proposed to reduce or eliminate the problem. Still, this problem was addressed only after rice growers had complained to the Mississippi River Commission; a close examination of the region might well have identified the problem before levee construction had begun.⁶⁹ Evaluating the Corps' work in the 1930s using the environmental values of a later generation would be misleading and unfair. Yet, the agency's focus on engineering and, where necessary, legal issues illuminates its organizational culture.

Certainly, Army engineers thought they were following a congressional mandate when they subordinated all other considerations to

flood control. But this does not completely explain the reliance on dredging. The approach unquestionably possessed political appeal as it held out the hope of eventually reducing flood heights and allowing a narrower floodway, but its appeal was also technological. The Corps had enormous success dredging the main stem of the Mississippi River ever since the introduction of hydraulic dredges in the 1890s. Ferguson applied his dredging theories to the main stem when he became division engineer of the Lower Mississippi Valley Division. His subsequent program of cutoffs, initially controversial, decreased flood heights and reduced the time the river was in flood stage. Consequently, flood control plans for the lower Mississippi were altered in the late 1930s. However, Ferguson's success on the Mississippi could not be replicated on the Atchafalaya. Geology and hydrology combined to force continuous changes in the land as ground appeared in one place or disappeared in another. Dredging could not guarantee a channel, but without dredging no channel would last long.

Dredging had one final appeal. So long as the Corps could focus on maximizing flood control efficiency, dredging was relatively uncomplicated. As reported in the *Annual Report of the Chief of Engineers*, its success could be measured in terms of cubic yards of material dredged. However, as social, economic, and, finally, environmental issues came to occupy public attention, dredging operations and effects became more complex and controversial. Despite the hopes of engineers, technology could not reorder the physical world without touching the human one. A St. Martinville resident recalled the abundant quail, deer, and other game that lived in the swamp in the 1920s. "Our streams weren't polluted, weren't sanded up. They didn't have no—what do you call those guys who plug up every stream? Corps of Engineers."⁷⁰

Private Property and Public Good: Levee Rights-of-Way

MOST PEOPLE PROBABLY ASSUME that the engineering elements of a flood control project are the most challenging, but in many instances they are wrong. Often, a far more subtle and complicated issue confronting planners and politicians is the reconciliation of private property rights with the public good. Commonly, the solution defies rational procedures. Almost invariably, it invites future legal and institutional disputes. The development of the Atchafalaya Basin

floodways illustrates the problem well, for the controversies surrounding the acquisition of levee rights-of-way and flowage easements embraced everyone from poor Cajun fishermen to the President of the United States. Like many property issues, the controversy evolved from a political dispute to a legal one.

The language of the Flood Control Act of 1928 guaranteed the political confusion. In Sections 2 and 3, the act apparently lifted any requirement for local contributions save for—

1. Maintaining flood control works after construction.
2. Accepting land turned over to nonfederal interests by the federal government that had been obtained in order to construct flood control structures.
3. Providing rights-of-way on the levees along the main stem of the Mississippi.

Mississippi delta politicians concluded that the act eliminated any requirement for local contributions for levee construction along the Atchafalaya Basin. The related question of flowage rights centered, as already noted, on the interpretation to be put on the word "additional" that President Coolidge had insisted on inserting in Section 4 of the act.

The problem was the internal inconsistency of the 1928 act, for while authorizing the elimination of most local contributions, it also authorized prosecution of the Jadwin Plan, which specifically stated that nonfederal interests were to provide all levee rights-of-way and flowage rights in the floodways. Jadwin's position was reiterated in the Corps' 1931 revision of the plan, although President Coolidge had ordered in January 1929 that federal compensation be offered for levee rights-of-way in the Boeuf and Atchafalaya floodways. The Corps' insistence on its own position put it at odds with both the executive and congressional branches of government, although undoubtedly many fiscal conservatives in both branches hoped the Corps would win the dispute and save the government many millions of dollars.

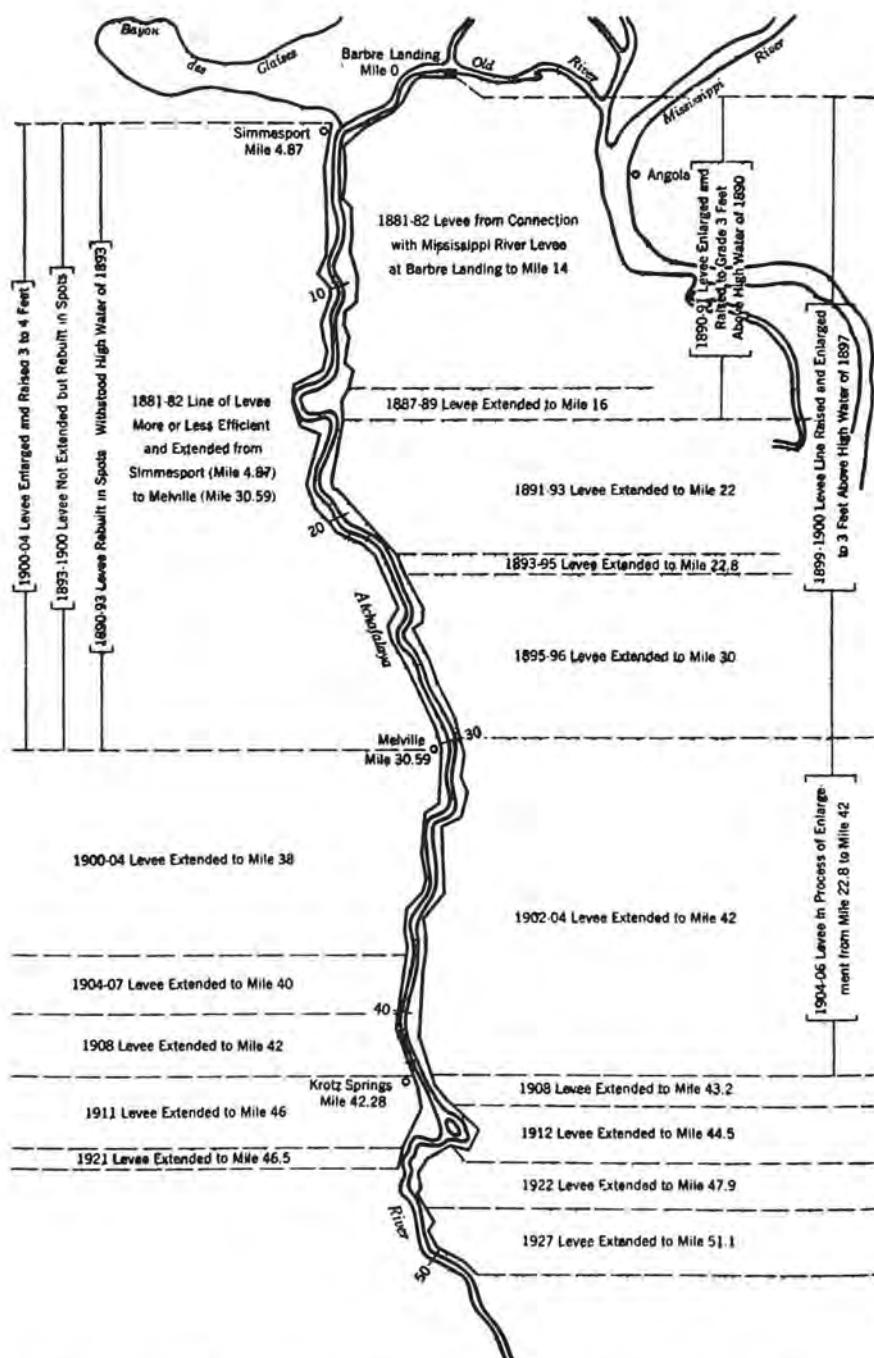
The debate over the language of the 1928 act quickly evolved into a practical problem of determining federal and nonfederal responsibilities. In late 1930, the controversy raged along a section of the south bank of the Red River, where a dispute over obtaining levee rights-of-way threatened the future viability of the Red River, Atchafalaya, and Bayou Boeuf Levee District. Like the Atchafalaya Basin Levee District to its south and east, this district had been established in 1890. Its northwestern tip was Alexandria on the Red River. It ran along the south side of the Red River east to the vicinity of Moncla and dipped

down along the west side of the Atchafalaya River for about 40 miles. Its total area was about 661,000 acres, a modest size compared to the Atchafalaya Basin Levee District's nearly 3 million acres (see map on page 61).⁷¹

The problem began when Major Holcombe, the New Orleans District engineer, attempted to negotiate directly with some landowners for rights-of-way on the south side of the Red River and grew frustrated by their demands for double the amount to which they had previously agreed. The impasse threatened the entire project, and state engineer Harry Jacobs went to Washington, where he suggested to General Brown that the levee board use state law to appropriate the land and then turn the property over to the federal government at a price considerably less than the landowners sought. Using the power of the levee board appealed to the Corps. Levee districts generally had better relations with the private landowners and, of more importance, could negotiate a cheaper price because of their legal position. Under Louisiana law, the districts could simply appropriate the land (eliminating requirements for abstracting titles, court proceedings, and the exercise of eminent domain) and pay an amount not to exceed the assessed value—significantly less than face value—of the preceding year.⁷² According to Jacobs, Brown agreed to this procedure.⁷³

However, by the time Holcombe received the request for reimbursement from the levee board, he had changed his view, probably in response to the Corps' position that was eventually incorporated into the revised report on the Jadwin Plan sent to Congress in March 1931. The report reaffirmed the Corps' position that nonfederal interests pay for all rights-of-way and flowage rights on the Mississippi River tributaries. Therefore, Holcombe decided, the federal government would pay *nothing* for the rights-of-way, not even the reduced price the levee board sought, and demanded that the words "without cost to the Federal Government" be inserted in the document transferring the rights to the United States. Board members appealed but to no avail. Anxious to complete the Red River levee, and with contractors already on the site, the levee board agreed to Holcombe's stipulation, although making it clear that its decision should not be interpreted as a precedent to furnish other levee rights-of-way without cost.⁷⁴

The board's position was clear, but its acquiescence eased the way for Major Holcombe to demand similar arrangements elsewhere. On 16 February 1931, he notified the levee board that the Corps had completed about half of the work on three different sections of levee



Progress of levee construction along the Atchafalaya River from 1881 to 1927.

on the south bank of the Red River. The rest could be completed in two years if "rights-of-way can be secured promptly." Holcombe sought the cooperation of the levee district in securing those rights and concluded, "Donation by your board of the rights-of-way required for these projects would assure prompt advertisement of the work."⁷⁵ Subsequently, Harry Jacobs and members of the levee board traveled to New Orleans in an attempt to persuade Holcombe to accept the land at the cheaper price the board could obtain and under no conditions to force the board to transfer the land without any reimbursement at all. However, Holcombe was adamant. If the levee board refused his conditions, the government would not complete the levees but would initiate work in some other levee district, possibly in Mississippi—a threat not only to the completion of Red River flood protection, but to Louisiana residents along the Mississippi River, who feared overflows from strengthened levees on the opposite bank. The district engineer's one concession was to agree that the levee district could seek reimbursement at a later date. The levee district officials reluctantly concluded that they had to go along with Holcombe. The levees were vital to flood control along the Red River and especially to Alexandria, which might be engulfed by floodwater without levee protection.⁷⁶

The same arrangement was extended to levee rights-of-way along other rivers, including the Atchafalaya. Holcombe threatened to use the construction funds elsewhere if the board did not provide rights-of-way



Three crevasses at Cypremort, Louisiana, during high water in the Atchafalaya Basin, 1932.

free of cost to the federal government for various levee sections along the Atchafalaya River. With little choice in the matter, on 22 June 1931, the board once more deferred to the Army engineers and agreed to convey the necessary rights-of-way without cost to the federal government. Once more the resolution carried the disclaimer that the action should not be interpreted as establishing precedent—a declaration increasingly suspect.⁷⁷ Then, following a flood in February 1932 in which the Red River rose 1.6 feet above previous flood heights, the levee district expedited the levee construction there by obtaining more rights-of-way and turning them over to the Corps of Engineers. This time, however, without objection from Major Holcombe, levee officials explicitly reserved the right to request payment at some future date.⁷⁸

The necessity for repayment was becoming more critical for the levee district and, in fact, for most of the levee districts in Louisiana. Like most of the other districts in the state, the Red River, Atchafalaya, and Bayou Boeuf Levee District had no available funds and used certificates of indebtedness—essentially IOUs—to pay for rights-of-way. These certificates carried a 5 or 6 percent interest rate, but sometimes the levee districts defaulted or deferred the interest payments. With the permission of the state legislature, the levee districts would issue additional bonds, but the revenue was often no more than enough to pay current interest. In sum, the certificates issued by the impoverished levee districts proved nearly worthless. Banks would not accept them, and some owners—likewise strapped for cash—sold them to scalpers who paid only half of their face value. In a depression-ridden economy, both the levee districts and the property owners were in desperate straits—literally and financially.⁷⁹

Unsurprisingly, then, the Red River, Atchafalaya, and Bayou Boeuf Levee Board of Commissioners pressed its claim for reimbursement. It received powerful support from Louisiana senator John H. Overton, who served on the Senate Committee on Commerce, and Representative Riley J. Wilson, chairman of the House Committee on Flood Control. On 15 May 1933, the two men sent Secretary of War George H. Dern a lengthy legal brief, which strongly argued that the federal government owed compensation to the levee district in accordance with the Flood Control Act of 1928.⁸⁰

Secretary Dern shared the brief with General Brown, who wavered. The general was unsure of his authority to honor claims for levee rights-of-way in light of the conflicting interpretations of the 1928 Flood Control Act. The act contained no specific provisions for reimbursement, and Brown believed (perhaps hoped) that the financial



Henderson, Louisiana, 49 hours after the Cyphremort crevasses, 1932.

burden might settle on state, rather than federal, agencies. Brown and Dern also apparently thought that paying for levee rights-of-way might compromise the government's case dealing with flowage rights. In the Kincaid decision, the Supreme Court had advised the complainant to proceed with his case through the Court of Claims. Kincaid had not, but others had; however, the Court had not yet reached a decision. If it ruled that the United States acquired a liability through the construction of floodways, then the government faced the problem of finding appropriations sufficient to pay for damages. Some might infer, it was feared, that willingness to pay for levee rights-of-way might provide a legal foothold for those demanding payment for flowage rights. In sum, the issue of levee rights-of-way involved far-ranging legal, financial, and political controversies. Secretary Dern determined that the entire matter should be referred to the Department of Justice and, on 20 May 1933, formally asked Attorney General Homer S. Cummings for an opinion.⁸¹

At the beginning of June, Cummings responded. He concluded that Section 4 of the 1928 Flood Control Act required the United States to acquire levee rights-of-way through condemnation proceedings in the Atchafalaya and Boeuf basins and along the south banks of the Arkansas and Red rivers except where the land was donated to, or purchased by, the United States already. The wording left little doubt that the Attorney General would reach similar conclusions for the rights-of-way

of other tributary levees built pursuant to the Jadwin Plan. His answer eliminated the necessity of responding to the Secretary of War's second question, which had to do with the advisability of proceeding with condemnation proceedings in light of the suits brought before the Court of Claims. That question, Cummings suggested, was one of policy, not law.⁸² The Corps acted quickly on Cummings' decision and within a week had instructed the Mississippi River Commission to begin payment for the rights-of-way necessary for the construction of tributary levees built in pursuance of the Jadwin flood control plan.⁸³

All seemed well until the Corps came to those specific claims of the Red River, Atchafalaya, and Bayou Boeuf Levee District that offered levee rights-of-way "without cost." General Brown considered whether the specific language waived the levee board's rights to compensation. Secretary Dern agreed once more to ask the Attorney General for an opinion.⁸⁴ And once more the levee board sought assistance from Senator Overton.

The name John H. Overton is inextricably connected with Louisiana politics of the 1930s and with major national flood control legislation. A lawyer of some skill, intelligent, a man of probity, a spellbinding orator, but in the end possessed of ambitions exceeding his talent, he associated himself with Huey Long because he was too aristocratic to attract the majority of Louisiana voters and needed someone with more popular appeal to champion his cause. In the 1927 gubernatorial election, Overton supported Long against both the incumbent governor, Oramel H. Simpson, and, ironically in light of their later alliance on flood control legislation, Riley J. Wilson. Two years later, Overton successfully helped defend Governor Long in impeachment proceedings. Long needed to reward Overton, but struggled to find the right position. He



Congressman John Holmes Overton (1875–1948) of Louisiana. He was a U.S. Representative from 1931 to 1933 and a U.S. Senator from 1933 to 1948.

remarked, "Overton knows less about politics and more about law and government than any other man I ever knew."⁸⁵

Nevertheless, when a congressman suddenly died in 1931, Long supported Overton to fill the unexpired term. Overton really wanted to be governor, but Long refused to support him for that position, saying, "You will imagine somebody is going to accuse you of something—one newspaper article and you will think the Tower of Babel is going to fall on you, and I have just decided to tell you, you aren't the man to go in there."⁸⁶ Long evidently had fewer problems promoting Overton for a position in Washington, D.C. In 1932, his active support for Overton in a Senate race decisively determined the election outcome, although the defeated incumbent, Senator Edwin S. Broussard, claimed election fraud with some justification and successfully petitioned the Senate to hold an official inquiry of the election. The official committee report, not issued until January 1934, claimed that the election was a "fraud upon the rights of the citizens" but could not find evidence that Overton was personally guilty.⁸⁷ In any event, even with the disputed ballots discounted, Overton would have won.⁸⁸ In the words of one magazine writer, Overton was "a good man gone Long."⁸⁹

Overton would have been particularly sympathetic to the problems of the Red River, Atchafalaya, and Bayou Boeuf Levee District, for his entire life had been associated with the Red River. He was born in Marksville, south of the Red, in 1875, and resided in Alexandria on the south bank of the Red River. When unfinished levees threatened Alexandria, his interest became personal as well as political. On 29 July 1933, Overton addressed a letter to the Secretary of War, the Attorney General, the Comptroller General, and the Chief of Engineers in which he argued that "the public policy and the act of Congress embodying that policy cannot be set aside or modified by the action of a local State levee board undertaking to enter in an agreement with a subordinate agency of the Federal Government."⁹⁰ The senator also objected to Major Holcombe's threat to divert funds intended for the Atchafalaya levees to other projects. "Such representation," Overton maintained, "was wholly without support in law, but its effect from a practical standpoint was to compel the local levee board to make such salvage as it could."⁹¹ Overton's objections were well known, and Secretary Dern had requested the Attorney General to examine the case even before receiving the senator's letter. At the beginning of September, Attorney General Cummings responded that both the contractual nature of the agreements with the levee board and the doctrine of equitable estoppel

eliminated any requirement by the federal government to pay for the rights-of-way.⁹²

General Brown was uncomfortable with the Attorney General's decision, believing it "very unjust discrimination,"⁹³ and recommended to Secretary Dern that the government proceed to reimburse the levee board despite the absence of any legal obligation to do so. He was also concerned that the decision would seriously obstruct work on the flood control project and alienate people in the Mississippi Valley. The matter was referred to the Judge Advocate General, who concluded that such claims may not be properly paid. J. R. McCarl, the Comptroller General of the United States, reaffirmed the decision: payment was not authorized.⁹⁴

The only remaining route for redress was through congressional action. On 8 January 1934, Overton introduced a bill (S. 2067) to reimburse the Red River, Atchafalaya, and Bayou Boeuf Levee Board exactly \$652,736.79 for the levee rights-of-way. However, the senator soon concluded that his bill was not broad enough. On 6 February, a day after holding hearings on his bill, he introduced substitute legislation (S. 2796) which authorized the Secretary of War to reimburse nonfederal entities in the Mississippi Valley for levee rights-of-way (excluding levees on the main stem) regardless of the conditions under which the levee rights-of-way were furnished, "or may be furnished in the future." The only constraints were that the prices be reasonable and that the payments or reimbursements be done "in conformity with local custom or legal procedures in such matters and to the satisfaction of the Chief of Engineers."⁹⁵ The Corps of Engineers believed the aggregate amount required for this reimbursement was between \$2 and \$3 million. This, Overton pointed out, was significantly less than the \$4 million he estimated would have been required had the federal government purchased the rights-of-way directly.⁹⁶ After receiving assurances that neither the War Department nor the Bureau of the Budget objected to the measure, the Senate Committee on Commerce unanimously approved Overton's new bill on 20 February.⁹⁷

On the House side, Louisiana Congressman Cleveland Dear followed Overton's lead and substituted his bill for reimbursing the Red River, Atchafalaya, and Bayou Boeuf Levee District with one that authorized reimbursement of all levee districts involved in work on the tributaries of the Mississippi within the flood control project area.⁹⁸ At this point, progress slowed. Overton guessed that Michigan Senator Arthur Vandenberg was preventing a floor vote because Overton opposed ratification of a U.S.-Canadian treaty on the St. Lawrence

Seaway, a project dear to the Michigan senator (the treaty was rejected). Finally, however, Congress approved the legislation in mid-April. On 23 April 1934, President Roosevelt signed the appropriately named Overton-Dear Act,⁹⁹ putting to rest at least one issue that had threatened the flood control project as well as the financial health of levee districts in the lower Mississippi valley.

Private Property and Public Good: Flowage Easements

WHILE THE ISSUE OF LEVEE RIGHTS-OF-WAY stirred passion, the government's refusal to pay for flowage easements sparked far more anguish and polemics. Contentious litigation pitted private citizens against the federal government, raised fundamental issues relating to individual rights versus the public good, and even questioned what the common good was. Never did floodway inhabitants cease their protests over this matter. Rare was the day when some court, somewhere, was not considering a petition for redress. The ad hoc Iberia-St. Martin Parish Flood Control Organization sought revisions in the flood control plan, proclaiming in early 1929, "The Jones-Reed [sic] bill as accepted by Congress makes no stipulation or provision for the payment of flowage rights.... It takes the native out of his element, nudifying him mentally, morally, and financially, and tells him to either sink or swim, not flinging to him even the proverbial straw."¹⁰⁰

A year later the Louisiana State Department of Agriculture and Immigration published a pamphlet that gave a statistical overview of the value of agricultural production and livestock in the parishes affected by floodway construction. The department believed it "unthinkable" that the national government would "give sanction to a project which would cause the utter destruction of a vast territory that has been settled and continuously inhabited by the finest type of American citizenship for nearly two hundred years."¹⁰¹ Not only Louisiana politicians, but representatives and senators from other southern states introduced bills during the Hoover administration to authorize the federal government to pay for floodway easements. The Corps of Engineers consistently objected to all these measures.¹⁰²

Predictably, Louisiana authorities put a greater value on the basin than federal officials did. Whereas the Board of State Engineers estimated the approximate value of agricultural land in the Atchafalaya Basin at \$18.5 million and timber and swamp land at \$15.7 million, the

U.S. Department of Agriculture concluded that agricultural land was worth only \$7.8 million and woodland only \$7.4 million. The department largely discounted the value of swampland except for some trapping purposes.¹⁰³

Regardless of the value of the Atchafalaya Basin, the Corps of Engineers had publicly and repeatedly emphasized its opposition to outright government purchase of flowage easements. Although the Corps' position may have mirrored agency conservatism, events in the summer of 1933 suggest that the agency was neither so rigid nor so apolitical about the issue as many may have thought. Quite the contrary, the Corps attempted to exploit political opportunity and congressional largess to eliminate a troublesome problem even at the cost of completely reversing its position.

The New Deal programs of President Franklin D. Roosevelt, who entered his office in March 1933, sparked the Corps' reassessment. Part of FDR's conservation program was a plan to put more forest lands under public ownership.¹⁰⁴ More intensive management of both public and private lands would, the President foresaw, lead not only to better logging practices but to the protection of major watersheds. Roosevelt decided to set aside about \$20 million of unobligated public works monies made available to him in the 31 March 1933 relief act (which also established the Civilian Conservation Corps) to purchase forest and other agricultural lands.¹⁰⁵ The discussions about where the money should be spent occurred in sessions of the National Forest Reservation Commission, which had been established in 1911 to advise the President on land acquisition for national forests. The Secretary of War had chaired the commission since its inception. It also included the Secretaries of Agriculture and the Interior, two senators, and two representatives.

The commission recommended that the full \$20 million be used to purchase lands in 42 different "purchase units" that it had previously designated. The President at first agreed, signing an executive order at the beginning of June.¹⁰⁶ Within a short time, however, Roosevelt expressed doubts. On 24 June, he wrote Secretary of Agriculture Henry A. Wallace that he thought that a portion of the money should be spent in areas outside of the 42 purchase areas. "My reason for this," he explained, "is that as a matter of policy the wider the distribution of federally owned and developed forests, the wider will be the public interest and education in regard to the importance of organized forestry."¹⁰⁷ He pointed out that the states stretching from Georgia to Louisiana had "practically no national forests and the inhabitants of those states take little or no interest in forestry."¹⁰⁸ About three weeks

later, he further elaborated: "It is my thought that our Government policy should take us distinctly into the yellow pine belt in Florida, Georgia, Alabama, Mississippi, and Louisiana, not only because we have comparatively little Federal yellow pine land, but also because next winter we may want to establish a great many CCC [Civilian Conservation Corps] camps in a warm climate."¹⁰⁹ In fact, despite Roosevelt's direct interest, the Forest Service acquired no land immediately. The Bureau of the Budget had decided it was "impracticable" to allocate funds from those provided in the 31 March act and agreed only to allot funds from those made available by the National Industrial Recovery Act (NIRA) of 16 June 1933.¹¹⁰

In the midst of all these discussions, General Brown had an idea, undoubtedly exploiting information provided to him by Secretary of War Dern, who chaired the National Forest Reservation Commission. Another source of intelligence may have been the chief of the Forest Service, Robert Y. Stuart, who served as an engineer officer in Europe during World War I and probably knew the Chief of Engineers. In any case, on 8 July, Brown made the surprising recommendation to Dern that the federal government purchase the lands in the Boeuf and Atchafalaya floodways. He also seemed to consider purchasing lands in the Red River backwater, but this is unclear. His estimated purchase price was \$40 million, which would have covered the two floodways only, but he estimated the total acreage at 4 million, an area that would have encompassed the backwater. In any case, Brown advised that half of the cost be charged to flood control and half to the national forests,¹¹¹ a formula that would have necessitated that the full \$20 million allotted to the Forest Service be used to purchase the floodways.

Brown's proposal, so clearly a reversal of departmental policy, can be explained only in the context of the times. By using NIRA funds provided to the Forest Service to offset the purchase of floodway lands, the Chief of Engineers would make the total cost more palatable to Congress. Frustrated by the constant threat of court challenges, the Corps certainly must have found the approach appealing, for it would eliminate time-consuming litigation, preclude further congressional hearings on the subject, and lay to rest the most difficult obstacle in the way of completing the floodway system. The use of NIRA funds also meant that the acquisition could be viewed as part of Roosevelt's overall program to stimulate the economy, and the proposal responded to the President's concern that more forest lands be purchased in the South.

Upon receiving a copy of Brown's memorandum from Dern, Chief Forester Stuart noted the inconsistency in Brown's figures, but relying on the Department of Agriculture's earlier survey of the lands in question, came to the same conclusion as Brown: land purchase was an economically viable course of action. If the two basins flooded, Stuart calculated that claims for compensation could be as much as \$100 million, or \$60 million more than outright purchase. Subject to the desire of the War Department and the approval of the Secretary of Agriculture, Stuart, ever the enthusiastic advocate of national forest expansion, volunteered to have the Forest Service purchase the land. His one reservation dealt with the fifty-fifty split between flood control and the national forest budgets. At \$40 million for the two floodways, Stuart calculated the cost per acre at \$16.00, of which, under Brown's plan, \$8.00 would be charged to the Forest Service. That price far exceeded the \$1.82 per acre cost of forest lands recently approved for purchase by the National Forest Reservation Commission. Therefore, Stuart recommended that 75 percent be charged to flood control and 25 percent to the national forests. At the same time, he proposed that the *entire* cost of the project could legally be financed under provisions of the NIRA, including that part charged to flood control.¹¹² To that end, he sent Secretary Dern a draft letter to the President for Dern's signature. The letter recommended that \$25 million be allotted from NIRA funds to purchase the floodways and that the lands purchased be set aside as national forests through presidential proclamation. While the money would not be enough to purchase all the land, it was enough for the next two years, at which time Stuart clearly anticipated further appropriations and purchases.¹¹³

Dern sent the draft letter to General Brown for comment, and Brown recommended that Dern sign it.¹¹⁴ Brown also provided Dern with a draft letter to the Secretary of Agriculture formally requesting the assistance of the Department of Agriculture to purchase "certain lands in the Mississippi Valley."¹¹⁵ However, Dern did not sign either letter. The reasons remain obscure. Probably, Dern did not want to circumvent the National Forest Reservation Commission, which clearly had expressed the opinion that funds be spent first on the 42 "purchase lands." Moreover, he may have thought it not worth the political risk to raise the price of an already expensive project without express congressional authority, and under Stuart's plan the cost attributable to flood control would be a not insignificant \$30 million. When General Brown retired in October 1933, and Stuart died unexpectedly that same month,¹¹⁶ the proposal temporarily lost momentum, but not for long. In an administration headed by a President who fervently believed

in the preservation of forestland, the idea of turning floodways into national forests continued to exert a strong appeal, and, as we shall see, the issue was raised again in the 1936 Overton Act.¹¹⁷

No immediate political resolution was in sight, and, at least temporarily, the federal courts seemed the only hope for redress. More litigation came out of the Boeuf Basin than the Atchafalaya, the Kincaid case being the most important, probably because Atchafalaya Basin residents desired federal assistance while Boeuf Basin inhabitants questioned the necessity of a floodway there at all. By November 1934, Boeuf Basin residents had filed 67 suits in the federal Court of Claims. Because of the cost of litigation and the complexity of the issues, 50 of the plaintiffs agreed to abide by the decision in one major test case, that of Julia C. Sponenbarger.¹¹⁸ At the time, it seemed clear that the decision would also apply to the Atchafalaya Basin. However, the Supreme Court did not render a decision until 1939 (in favor of the government). By that time, the case was all but moot, for the Corps of Engineers and Congress had drastically revised both the engineering and real estate provisions of the Jadwin Plan.

Chapter 6

Louisiana and Mississippi: The Battle Over Floodways

THROUGHOUT ROOSEVELT'S NEW DEAL administration, John Overton and Will Whittington dominated federal legislation affecting the lower Mississippi River. They were instrumental in formulating their states' positions on flood control matters and heavily influenced their states' congressional delegations on how to vote. Representative Whittington, who became chair of the House Flood Control Committee in January 1937, was, like Overton, a lawyer, being admitted to the bar in 1899, one year later than the senator. Their legal expertise became invaluable in the arcane and changing world of flood control legislation. Few politicians and probably no bureaucrat dared challenge their mastery of the subject.

Often Overton and Whittington cooperated to advance the cause of Mississippi valley flood control, especially in placing as much of the financial burden as possible on the back of the national government, but their cooperation was based on mutual respect for each other's knowledge and influence rather than on mutual affection. Overton's ability to sway Mississippi interests was undoubtedly hampered by his association with Huey Long, an enemy of Mississippi's senior senator, Pat Harrison. Combining qualities that would have been incongruous in any but a southern politician, Harrison was both too conservative and too staunch a defender of Roosevelt to suit Long's taste.¹ Meanwhile, Whittington's defense of the Boeuf Floodway faced innumerable skeptics from outside Mississippi. Overton agreed with the Army engineers that a floodway was necessary, but he repeatedly pointed out that Arkansas and Louisiana residents were being called upon to sacrifice their property for a floodway that would primarily benefit the Yazoo delta residents living in Whittington's district.

The decisive roles of Whittington and Overton suggest the limited ability of the Roosevelt administration to influence water resources development. Unlike New Deal social reforms, which led to far greater federal influence on people's lives, attempts at centralized planning of water resources generally were defeated by state and local interests,

whose concerns prompted continual congressional upkeep of the pork barrel; the notable exception was the Tennessee Valley Authority.² Senators and representatives desired federal funding for local projects of dubious national benefit, but they feared any federal plans that would transfer water supplies from one state to another, or that seemed to benefit one area—aside from their own—at a disproportionate cost to another. Rational, basinwide planning remained an ideal contrary to all political instincts.

Nevertheless, the Jadwin Plan was, indeed, an exercise in basinwide planning, one for which the 1917 Flood Control Act had ill prepared the Corps of Engineers. Besides authorizing levee work on the Mississippi, the 1917 act had provided for a large Sacramento valley flood control project containing interdependent, but separate, engineering features.³ This project was cost-shared, entirely in one state, and enjoyed widespread local and political support. In contrast, the 1928 Mississippi River flood control project, which also contained many engineering subprojects, including the floodways, entailed far more federal money and far less local cost, involved several states, embraced competing local interests, and affected far more private property. Consequently, from the beginning, the Corps faced numerous political challenges to its plan.

The plan was both a technological and political experiment. It not only promised large-scale flood control, but also tested the boundaries of federalist administration. No interstate compact to regulate water use (as with the Boulder Dam Compact) accompanied the plan; no legal instrument was created to obtain formal state approval. While the federal government's right to regulate interstate navigation had long been recognized, the 1928 Flood Control Act significantly expanded the national government's involvement in planning, implementing, and managing interstate flood control projects.

Success depended on the Corps' addressing and reconciling disparate nonfederal concerns. Selling the Jadwin Plan—even as revised—to Congress required that the Corps demonstrate its political neutrality. To be seen as favoring one region's (or congressman's) interests against those of another would threaten the entire project in Congress. It was especially important that the Corps not alienate Overton or Whittington. The agency needed to enhance the common good of lower Mississippi residents. Its reputation hinged on solid technical judgment that somehow managed to rise above or reconcile local political considerations.

Moreover, the cost of some project elements, particularly with real estate acquisition included, forced the Corps to be more accountable.



Senator Overton and Representative Whittington (undated photograph). William Madison Whittington (1878–1962) served in the House of Representatives from 1925 to 1951.

At times, congressional insistence on the subject surprised the agency. For instance, in 1938, Arkansas Representative John McClellan questioned Chief of Engineers Major General Julian L. Schley about the economic justification for the floodways. Schley clumsily replied, "I might say that, so far as I know, we are not faced with that question expressed in dollars and cents at the present time. We have attempted to provide a safe river against floods and the procedure has been progressive." He went on to say that there are "many things which have a bearing on it which, perhaps, are not expressible in terms of dollars and cents in this case because I think that the Nation is demanding a safe river against floods."⁴ Eventually, Schley did provide a short economic justification which noted:

The justification for the expenditures is to be found, not so much in the calculable physical benefits as in the relief of the human suffering and disorder that occurs when large areas, great numbers of towns and villages, and many transportation lines are inundated for long periods of time. The lower Mississippi project is one large project, the individual items of which are so interwoven with the entire project as to make their isolation for separate consideration impracticable.⁵

In short, the different parts of the project, such as the Atchafalaya Floodway, should not be justified on their own terms but as part of the entire project for flood control on the lower Mississippi; and, since it was all but impossible to measure the benefits of the entire project because of the difficulty of assigning values to the relief of human suffering, any such measurement was bound to be arbitrary. Yet, politicians routinely appealed to the Corps' purported objective assessment when attempting to persuade their colleagues to approve a project. Senator Overton proclaimed, "In order to determine whether a project is of value as a flood-control measure, it should be submitted first to the judgment of experts, and the chosen and recognized experts upon this question are the Army engineers."⁶

Overton left unacknowledged the fundamental problems in dealing with project justifications. First, engineering and economic expertise reflects unquantifiable cultural biases—the value society places on preventing human suffering or protecting the environment. Second, professional expertise does not always square with political reality, especially when the project encompasses many jurisdictions and compels sacrifices from private citizens. The controversy over the floodways in Louisiana and Mississippi reflected these problems and more.

The Markham Plan

THE CORPS OF ENGINEERS took three years to respond to the 28 January 1932 request of the House Flood Control Committee to review the engineering features of the Jadwin Plan. During that time, General Ferguson had initiated a series of experiments at the Waterways Experiment Station in Vicksburg and had also begun a series of cutoffs on the lower Mississippi that would shorten the river's length and, more important, increase the river's capacity to carry floodwater. The success of the cutoff program enabled the Corps to recommend significant changes when the Chief of Engineers, Major General Edward M. Markham, submitted the report to the Flood Control Committee on 12 February 1935.⁷

Markham, who had succeeded Brown at the beginning of October 1933, had been unhappy with a number of draft revisions to the Jadwin Plan that had circulated within the Corps soon after he entered office and had postponed submitting any proposals to Congress for one year.⁸ Meanwhile, in June 1934, President Roosevelt submitted a preliminary

report on the development of the nation's rivers in response to a congressional request made four months earlier. Based on available information, and drafted by technical subcommittees of various departments, including the Department of War, the report focused on ten major river basins, including the main stem of the Mississippi. Roosevelt called attention to the necessity for further study and promised additional information to the next Congress.⁹

Within two weeks after submitting this report, Roosevelt added some thoughts specifically dealing with the flood control project on the lower Mississippi. He wrote Riley Wilson, chairman of the House Flood Control Committee, "This important undertaking must be completed," and promised to send Congress recommendations to provide "a fair and equitable adjustment to the property owners and local interests affected by the execution of the project."¹⁰ Roosevelt's interest no doubt spurred efforts within Markham's office to revise the Jadwin Plan. In October 1934, Markham turned to the Mississippi River Commission and directed it to submit a report based on its various tests and findings on the lower Mississippi. This report finally proved acceptable. It served as the basis for Markham's recommendations in his report to Congress in February 1935.¹¹

Markham's plan reflected both engineering advances and political reality. The advances primarily dealt with the creation of cutoffs, but research in the relatively new field of soil mechanics also allowed consideration of raising levees to heights previously thought unsafe. Meanwhile, innovative people in the field adapted new technology. David Bowman, the assistant engineer in the New Orleans District, designed a drilling rig. It was mounted on a truck, that could take soil borings up to 500 feet beneath the surface, allowing for more and deeper borings than the Corps had been able to do.



Major General Edward Murphy Markham (1877–1950) was the Chief of Engineers from 1933 to 1937.

The resulting information enhanced the Corps' geotechnical knowledge, enabling engineers to choose the best sites for construction, improve structural design, and predict foundation problems. Another gifted engineer, Captain John Paul Dean, who graduated first in his class in West Point in 1918 and then obtained a B.S.C.E. degree from MIT in 1921, served as chief of the engineering division in New Orleans in the mid-1930s. While in that position, he initiated an aerial survey of the entire Atchafalaya Basin so the Corps would have accurate maps.¹²

The political reality was, of course, vehement local opposition to conveying flowage easements to the government without compensation and, in the case of the Boeuf Floodway, to constructing the floodway at all. Nevertheless, Markham denied that any political concerns influenced his report. When Congressman Dear inquired whether the proposal to substitute the smaller Eudora Floodway for the Boeuf Floodway resulted from local opposition, Markham protested:

Not at all; that had nothing to do with it. We simply discovered that because of the land, and the conservation of the railroad properties for which we are going to pay, the Macon route [Eudora Floodway] would be more economical than the Boeuf route. In other words, it makes for less difficulty and less expense and for greater conservation....¹³

Markham protested too much. The Corps longed to minimize the politics involved in its engineering plans, but, paradoxically, that required some political footwork. General Brown had tried to take advantage of New Deal initiatives to resolve the problems of flowage easements. Similarly, Markham, despite his testimony, undoubtedly understood the political appeal of reducing the floodway size. Surely, too, General Ferguson, ever the efficient engineer, realized the political advantages of his cutoff experiments. The new cutoffs on the Mississippi River, in combination with reservoirs the Corps recommended for the St. Francis and Yazoo tributaries, would increase channel capacity and reduce flood heights on the Mississippi, thereby eliminating the necessity for the large Boeuf Floodway, reducing the size of the floodway east of the Atchafalaya River, and placating property owners. Concurrently, the Corps worked to increase the capacity of the Atchafalaya River to handle more floodwater.

The four major recommendations in the "Markham Plan" were both political and engineering in nature. They were:

1. Provide compensation for flowage rights to owners of land within floodways.
2. Abandon the Boeuf Floodway in favor of a new, smaller floodway to be called the Eudora Floodway.
3. Construct Morganza Floodway and abandon the East Atchafalaya Floodway and its fuse plug levee.
4. Construct an additional outlet to the Gulf of Mexico, west of Berwick.

The proposed Eudora Floodway would cover 850,000 acres and extend west about five miles to a rise of land known as Macon Ridge in northeast Louisiana. In contrast, the Boeuf Floodway, which was to start just south of Arkansas City, would cover some 1,330,000 acres and extend west about nine and a half miles.¹⁴ General Markham boasted that the Eudora Floodway "would occupy minimum acreage, for the fundamental purpose of protecting the balance from flood, and would leave in production and taxation the highest acreage [possible], to the benefit of the States and to the benefit of the people."¹⁵ In other words, far less farmland would be subject to some future flood disaster along the Mississippi River. More candid than his response to Congressman Dear, Markham's statement reveals the political calculations that so attracted the general.

The Corps' new plan would protect the land around Morgan City and would also allow more rapid discharge of floodwater into the Gulf of Mexico. The original Jadwin plan had allowed water to exit from the Atchafalaya River into the Gulf of Mexico through Berwick Bay. During extreme floods, the land east and west of Morgan City would be inundated, while Morgan City itself would be protected by a ring levee. The revision called for a second outlet, Wax Lake Outlet, that would be constructed approximately parallel and to the west of the Berwick Bay passage. Protecting the land around Morgan City also substantially reduced flood threats to a vital transcontinental railroad line. The estimated cost for dredging the new channel, building levees, and constructing necessary highway and railroad bridges was \$8 million.¹⁶

While the Wax Lake Outlet would help to send floodwater into the Gulf, the Army engineers worried that the Atchafalaya Basin floodways would not be able to accommodate the 1.5 million cfs dictated by the Jadwin Plan. The problem was that the swampy ground of the basin could not absorb the excess flow. To alleviate this problem, Markham recommended a major modification of the floodway east of the Atchafalaya River. The modified floodway would open directly onto

the Mississippi River through a regulated control structure, either a gate structure or a rock-filled weir, at a spot north of Morganza on the west side of the river. The water would spread over a tract of land 30 miles long and 4 to 6 miles wide and eventually spill into the lower Atchafalaya Basin.

There were several advantages to this plan. It would remove about 100 square miles of valuable developed farmland in Point Coupee Parish from the floodway by moving the east floodway entrance some 20 miles south of Old River, where the land was less cultivated and fertile.

Also the lower guide levee of the Morganza Floodway would use an already partly completed section of the East Atchafalaya Basin Protection Levee, while the upper guide levee would connect the Atchafalaya and the Mississippi River levees to the east and west. This new design and location would allow floodwater to reach the lower Atchafalaya Basin more quickly, a particularly important



Markham's revisions to the Jadwin Plan, 1935.

feature in light of Ferguson's success with cutoffs on the main stem of the Mississippi River. While the cutoffs reduced flood heights, they allowed increased flows, some of which needed to be diverted into the Atchafalaya Basin in the event of major floods. Finally, the Corps believed that this new floodway, combined with the Atchafalaya River floodwater, would render use of the West Atchafalaya Floodway highly problematical. The engineers anticipated that the Morganza Floodway would be used only when the flood stage at the Angola gauge (north of Morganza) reached 49 feet, 11.5 feet below levee grade.¹⁷

The recommendation to provide "the equitable and reasonable compensation of owners of lands in floodways" in a way that would "protect the United States against unreasonable and excessive claims" raised the most controversy.¹⁸ The problem was not the recommendation itself; many in Congress had long demanded compensation for the landowners and had faulted the Corps for refusing to acknowledge a federal obligation. Rather, the problem stemmed from a conflict over interpreting what is "equitable and reasonable." The Chief of Engineers and the Secretary of War recommended that compensation total not more than 1.5 times the assessed values of lands in the Eudora and Atchafalaya floodways as of 1 January 1935, but that no compensation be offered for lands already subject to routine backwater flooding in the Atchafalaya Basin below the latitude of Krotz Springs. Senator Overton rebutted that assessed values do not reflect true values, and, in any case, the determination of just compensation is a judicial, not a legislative, prerogative.¹⁹

The Overton Act

THE ONLY SUBSTANTIAL ISSUE still concerning Senator Overton was compensation. Unlike 1931, when the Louisiana Board of State Engineers vehemently denounced General Brown's report, Louisiana politicians and engineers enthused over Markham's proposals. The state engineers suggested only some fine-tuning—extending a levee here and building up a section there. The board confined its attention to the engineering features of the plan and, consequently, did not address the issue of compensation. Its final verdict was that the newly revised plan "comes as near being a perfect plan, consistent with justifiable outlay of funds, as it is possible to conceive."²⁰ The relative unanimity of opinion allowed the senator to start work on a bill rather quickly after congressional hearings concluded.

Overton worked closely with General Markham and with representatives from Arkansas, Louisiana, and Mississippi in preparing the bill, especially with Representatives McClellan and Whittington and Arkansas Senator Joseph T. Robinson, the majority leader. While support for new legislation was widespread, Overton did encounter some opposition to the Eudora Floodway from residents living in or close to the floodway area. Headed by a former senator, Joseph E. Ransdell of Lake Providence, Louisiana opponents argued that the new floodway would take over 60 percent of East Carroll Parish, nearly 50 percent of Madison Parish, 30 percent of Tensas Parish, and 20 percent of Concordia Parish. Additional land would be sacrificed in West Carroll and Franklin parishes. Nevertheless, Overton held firm. The Army engineers had insisted on the impossibility of entirely eliminating the floodway, and Overton would not argue the engineering features of the plan with them. On the other hand, he was determined that landowners be paid a fair price for flowage rights.²¹

At Overton's request, the Office of the Chief of Engineers drafted legislation to implement the recommendations of Markham's plan, but differences over suitable compensation and procedures were difficult to bridge. Markham's draft called for the United States "directly or through the States or any agency it may select" to secure flowage rights. Senator Robinson expressed his concern that this wording might be a way for the United States to do nothing at all if the Corps selected an apparently appropriate agency, but one that in the end proved incapable of functioning. To resolve the issue, Overton redrafted the section to read plainly, "The United States shall forthwith acquire flowage rights for all flood waters that will pass by reason of diversions along the Mississippi River south of the Arkansas and along the Atchafalaya Basin...." (Section 12 of S. 3531).²² This left the manner of acquisition purposely vague, but clearly put ultimate responsibility on the federal government. At the same time, the new draft retained the wording recommended by Markham, which authorized the United States to enter into agreements with nonfederal agencies (levee boards, commissions, and state agencies) to acquire both levee rights-of-way and flowage rights and to transfer such rights to the federal government.²³

The question of the appropriate level of compensation proved more worrisome. Overton and his supporters thought the easiest way to handle the problem was to stipulate in the bill that the United States "shall pay to the owner thereof just compensation for such property so taken or damaged" (Section 12 of S. 3531). However, politicians and private citizens wondered whether "just compensation" was sufficiently

precise to avoid argument. Fred Hudson, Jr., of Monroe, Louisiana, and Lamar Williamson of Monticello, Arkansas, two lawyers who worked closely with Overton and also with local levee districts, researched the question and provided the senator with various legal definitions that, in sum, strongly suggested that "just compensation" means full and fair equivalent value for any loss sustained.²⁴ Supported by the legal research, Overton agreed that the wording was sufficient.

However, the changes hardly satisfied General Markham. Indeed, he approached the compensation section from an entirely different point of view. While Overton wished the federal government to assume the responsibility of providing "just compensation" to landowners, Markham sought a formula whereby federal liability would be strictly defined and limited. Nevertheless, Markham wished to be conciliatory. Unlike his report to Congress which recommended that "reasonable costs" be calculated at 1.5 times the assessment as of 1 January 1935, Markham's revised draft legislation recognized that Louisiana and Arkansas calculated assessments in very different ways. Therefore, equity demanded that different formulas be used to ascertain compensation. Markham's new formula provided that land values be based at 2.5 times the assessment value in Louisiana and 3 times the assessment value in Arkansas.

While Overton was gratified by the general's spirit of compromise, he still found some of Markham's suggestions unacceptable. First, Markham continued to insist that the assessment value of 1 January 1935 be governing, but by that time values in the Eudora Floodway area had plummeted as a result of the Depression and the earlier plans to build the Boeuf Floodway. Overton and others thought that assessments before 1932 would be fairer to use. Second, Markham did not actually *require* the government to do anything; he had substituted the word "may" for "shall" in the section dealing with flowage rights. Third, Markham's draft gave discretionary power to the Chief of Engineers and the Secretary of War to condemn the remaining property once 75 percent of the options for flowage rights and levee rights-of-way had been obtained in the Morganza and Eudora floodways.²⁵ Hudson argued for something more definite. He wanted to expedite progress and desired that the Corps be *directed* to condemn the remaining 25 percent and to begin construction immediately after acquiring 75 percent of the options. In passing, Hudson did acknowledge that Markham had, nevertheless, come a long way.²⁶

While Overton generally favored the modifications that Hudson and others recommended, he attempted to prevent his bill from being loaded down with ancillary and nongermane amendments, nor did he

wish to constrain the Army engineers when it came to the actual operation of the entire flood control system. For instance, he rebuffed a suggestion to turn the Corps' intention to use the Morganza Spillway only if the Angola gauge reached 49 feet into a legal requirement. He also resisted constituent pressure to add an amendment to compensate owners whose land had been exposed to floods on the main stem of the Mississippi River because the levees on their land had been set back from the river bank. The previous year, President Roosevelt had vetoed just such legislation, and, while Overton personally favored the measure, he feared that its inclusion would jeopardize the entire bill. The senator also objected to attempts to authorize the construction of reservoirs on the Arkansas and White rivers, which lay outside the alluvial valley of the Mississippi River (unlike the reservoirs Overton's bill authorized for the Yazoo and St. Francis river basins) and which, according to the Army engineers, would not eliminate the requirement for the Eudora Floodway, as some had argued.

On one matter, receiving no objection from General Markham, Overton did accept a suggestion. The Texas and Pacific Railway Company wished to change the discretionary authority the Corps had to construct a railroad crossing over the West Atchafalaya Floodway, as provided in Overton's original draft, and require the Corps to construct the crossing. The company feared that the Corps' belief that the West Atchafalaya Floodway might never be needed would be used to excuse the government from any obligation to the railroad. In the end, the revised legislation directed the Corps to build necessary highway and railroad crossings over the Morganza and Eudora—as well as the West Atchafalaya—floodways.²⁷

In March, Overton and Markham reached agreement on the compensation issue. Overton accepted Markham's recommendation that no money be expended on Morganza or Eudora floodway construction until 75 percent of the flowage rights and levee rights-of-way were acquired or options obtained from willing sellers; the Corps could institute condemnation proceedings to acquire the remaining 25 percent. The two men agreed to dispense with Markham's formulas to determine compensation and to limit the total amount of money available to acquire necessary rights to \$20 million, with the remaining 25 percent estimated to cost no more than another \$10 million. Markham also agreed to substitute "shall" for "may," directing the Army engineers to begin construction once 75 percent of the necessary rights were obtained. Overton raised no objection to Markham's decision to limit purchases in the West Atchafalaya Basin to the land above the latitude of Krotz Springs.²⁸

This compromise may have resolved some immediate problems, but it significantly retarded progress in the coming two years. Markham and Overton drafted language that precluded the construction of either the Morganza or the Eudora floodway until 75 percent of the necessary rights or options were obtained in *both* floodways. This may have been done at the insistence of Will Whittington, who strongly favored the Eudora Floodway but doubted the willingness of Eudora landowners to turn over their property rights to the government. Since opposition in the Atchafalaya Basin was not so intense, including that basin's rights and options in the 75 percent figure promised a more expeditious resolution of the real estate issue. That was the hope, but events followed a different path.

The approach reversed Markham's earlier position. In August 1935, the Chief of Engineers had supported a bill introduced by Representative Dear that would have authorized all of Markham's plan except the Eudora Floodway.²⁹ However, possibly coached by Senator Overton, who obviously desired Whittington's support, General Markham explained in a Senate hearing in 1936, "I think that if the plan is going to be carried out it should be carried out in its entirety...there are no alternatives that we know anything about." He stressed that if the Eudora Floodway were not built, land on both sides of the Mississippi between the mouths of the Arkansas and Red rivers would be subject to crevasses and overflow.

The argument was unpersuasive. Eudora Floodway opponents believed that the only land the floodway would protect was the Yazoo Basin in Mississippi on the opposite side of the river, which was represented in Congress by the increasingly powerful Whittington. Unquestionably, Yazoo Basin residents would gain the most. Still, opponents overlooked the fact that the Corps had planned a system of interconnecting floodways long before the ascent of Whittington's political star.³⁰

Markham's position may have been good engineering (although some would have argued otherwise), but it definitely was not good local politics, for it demonstrated a "take it or leave it" attitude to property owners in the Eudora Floodway. The general underestimated local opposition to the Eudora Floodway and probably thought that the entire plan would be accepted in the end. But this was not to be. F. H. Schneider, who represented the Northeast Louisiana Protective Association, said of the Eudora Floodway, "...we are going to make you pay like hell for the privilege of forcing this Utopia on us."³¹ Other private and public organizations in northeast Louisiana and southeast Arkansas joined the association in opposing the project. Local residents

opposed the Eudora Floodway as much as those farther south embraced the Morganza Floodway. Whittington and Yazoo basin residents may have hoped that linking the acquisition of options and rights in the Eudora and Morganza floodways would encourage landowner acceptance of the Eudora Floodway. Instead, the opposite occurred. Lack of progress in acquiring the necessary rights for Eudora prevented construction at Morganza.

More immediately, another problem faced the Overton bill. When it was first debated on the floor of the Senate at the end of March 1936, Oregon Senator Charles L. McNary and some other Republicans attempted to link it to a massive omnibus flood control bill then before the Committee on Commerce. This legislation would authorize over 200 reservoir and levee projects nationwide. The fundamental argument was that singling out projects on the lower Mississippi for special legislation was poor planning and, possibly, poor economics should more comprehensive planning produce more efficient alternatives. It would be better to include the lower Mississippi projects with others being considered in the omnibus bill. However, both Overton and President Roosevelt opposed the Republican strategy. Roosevelt desired action on both the lower Mississippi flood control project and the St. Lawrence Seaway regardless of what happened with the omnibus flood control bill. Overton, of course, energetically resisted any effort to defer action on his bill, enlisting General Markham's supportive comments on his behalf.³²

In the Senate, Overton prevailed. On 21 April, the Senate passed on voice vote essentially the same bill that Overton and Markham had cobbled together. However, the bill's fate on the House side was far different. Of the numerous amendments offered, the two most significant dealt with cost-sharing and reservoir construction on the White and Arkansas rivers. Despite attempts by Overton and others to dissuade him, Congressman John E. Miller, a Democrat from western Arkansas, introduced an amendment to authorize the construction of 13 reservoirs on the White River and another 13 on the Arkansas. This reservoir plan came from a study completed by the Mississippi River Commission, but not yet officially forwarded to Congress. Miller's amendment disregarded General Markham's point that the reservoirs would not reduce the need for floodways nor substantially lower flood crests on the Mississippi; Markham estimated that the total reduction of the Mississippi flood crest would be some 4.2 feet should all 26 reservoirs be constructed.

But Miller was persuasive. He pointed out that the 4.2-foot reduction was still substantially more than the 9-inch reduction offered

by the construction of the reservoirs in the Yazoo and St. Francis river basins (Miller conveniently ignored the fact that those reservoirs were intended primarily for local flood control), and he also suggested that the reservoirs should be considered part of the total flood protection system of the lower Mississippi valley. Despite the formidable opposition of Representatives Riley Wilson, Will Whittington, and John McClellan, all of whom feared that inclusion of the reservoir authorization would invite a presidential veto, Miller's amendment carried, 78 to 36.³³

Even more worrisome to advocates of the Overton bill was an amendment introduced on 22 May by Ohio Congressman Thomas A. Jenkins. This amendment contained the same provisions that the Senate had tacked on to the omnibus flood control bill the previous day. These provisions, which came to be known as the "a-b-c requirements" required that before construction local interests—

- a. Provide lands, easements, and rights-of-way free of cost to the federal government.
- b. Hold and save the United States free from damages due to the construction works.
- c. Maintain and operate the works once constructed.

The amendment would undermine the agreements Overton and Markham had reached and, more importantly, doom any progress on the floodways. Whittington unsuccessfully attempted to obtain a ruling that the amendment was nongermane. After a short debate, the amendment carried, 74 to 61. Later the same day, the House narrowly passed the amended bill, 161 to 156, with 109 not voting.³⁴

In the House-Senate Conference, the Jenkins amendment quickly became the major issue. Overton insisted that local interests should not be compelled to furnish flowage rights and levee rights-of-way and eventually persuaded House conferees to give way. Accordingly, the final bill applied the Jenkins amendment to reservoirs only. The Senate also prevailed on the question of reservoirs on the White and Arkansas rivers. President Roosevelt signed the Overton legislation on 15 June 1936. A week later he also signed the omnibus flood control bill, which authorized some of the Arkansas River reservoirs that Miller had wanted.³⁵ The omnibus legislation—the Flood Control Act of 1936—marked the formal acceptance by the federal government of nationwide flood control responsibilities, previously confined to the lower Mississippi and Sacramento rivers.

News that Overton's initiatives had finally resulted in a major revision of the Jadwin Plan generated ambivalent reactions in Louisiana. On one hand, residents of the Atchafalaya floodways, including the new Morganza Floodway, were relieved that they finally would receive compensation for their sacrifices. The floodways had significantly lowered the value of their lands and constrained what they could do with their property. The Depression, too, had reduced incomes, and some residents were threatened with foreclosure. The compensation these residents received could spell the difference between staying where they were or having to move somewhere else with little money and even less hope.³⁶ On the other hand, many Louisianians, including some leading engineers and politicians, were disappointed that the real estate linkage with the Eudora Floodway remained. They correctly predicted that the Morganza Floodway would never be built as long as construction depended on obtaining necessary real estate options in both floodways.³⁷

The state was anxious to proceed with floodway construction and implicitly said so by passing enabling legislation barely two weeks after the approval of the Overton Act. The state law authorized the Secretary of War "to obtain and acquire property and property rights, flowage rights, rights-of-way and servitudes or easements or options therefore in this...in connection with any program or project of flood control, navigation, reclamation, reforestation, soil preservation, wild life refuge, agricultural development, reservoir, drainage, spillway, floodway or diversion channel for flood waters...."³⁸ At least in the Atchafalaya Basin, there seemed no obstacle to procuring quickly the necessary options.

Real Estate Problems

IN DEVELOPING THE PROCEDURES for obtaining flowage rights, the Corps of Engineers needed to consider one section of the Overton Act that, though seemingly minor, required time-consuming and close interagency coordination. Reminiscent of the discussions between General Brown and the Forest Service in 1933, Section 12 of the act provided that, instead of acquiring flowage rights, the Secretary of War may, upon the Chief of Engineer's recommendation, compensate the Department of Agriculture for the costs of property acquisition in the floodways. That would be done if the Secretary of Agriculture determined that the properties should be acquired for "national forests, wildlife refuges, or other purposes of his Department."

To save time and money, Secretary of Agriculture Henry A. Wallace and the new Secretary of War, Harry H. Woodring, decided that the government would attempt to obtain options for fee simple (which entitles the owner to the entire property with unconditional power of disposition) as well as for acquisition of flowage easements; the options would be good for two years. Meanwhile, on a reimbursable basis, the Department of Agriculture provided appraisers to the War Department to help ascertain whether any land was actually suitable for forests or refuges. Although the process appeared reasonable and efficient to the government bureaucrats, it confused and frightened local residents. Atchafalaya Basin landowners objected that they weren't interested in *selling* their property, only in granting easements. Some who would grant easements were scared off when Army officials also asked for fee options. Spurious accusations flew that the Corps would not even accept easement options if options for title in fee simple were not also offered. Landowners importuned their representatives and both Louisiana senators—Overton and newly elected Allen J. Ellender—to intercede with the Chief of Engineers and seek a halt to the process.³⁹

The appeals, persistent and loud, succeeded. On 9 July 1937, Markham, having already told Overton of his intention, instructed Ferguson to stop collecting options for fee simple. He added that he was "substantially disappointed in option requirements to date and urge your maximum personal efforts to recover lost ground." In response, Overton encouraged local politicians to begin an educational campaign to convince people to offer options for flowage easements.⁴⁰

Markham's disappointment primarily resulted from problems with Eudora Floodway landowners. By the beginning of July 1937, the Corps had obtained fee simple or flowage easement options that covered only a minuscule portion of the appraised value of the Eudora Floodway. A comparison with the West Atchafalaya and Morganza floodways is revealing.

Percentage of Appraised Values Covered by Options

	Fee Simple Options	Flowage Easement Options
Morganza	54.4	26.6
West Atchafalaya	16.6	10.6
Eudora	0.25	0.57

Clearly, progress in the Eudora Floodway lagged far behind the other two. Indeed, by the end of 1937, more than the required 75 percent of flowage rights had been secured in the Morganza Floodway, but only approximately 20 percent had been secured in Eudora.⁴² If Morganza were ever to be built, it could not be held hostage to the real estate obstacles in the companion floodway to the north.

Markham's decision to forgo fee simple options was ironic in one respect. At the beginning of April 1937, he had completed a report in which he had reversed his former opposition to fee simple options in the floodways. The reason he gave was the Corps' recent experience during a record flood that struck the Ohio and Mississippi rivers the previous January. The discharge out of the Ohio reached almost 2 million cfs, and towns all along the Ohio were under water.⁴³ To save Cairo, Illinois, the Corps decided to breach the Birds Point-New Madrid Floodway in Missouri. However, not all the necessary flowage easements had been obtained for the floodway, and some people refused to leave. Armed men attempted to prevent the Corps from blowing a fuse plug levee. Only when the Secretary of War prevailed upon Missouri's governor to clear the fuse plug area was order restored. Both state police and the National Guard were used.⁴⁴ In his report, which the President transmitted to Congress in late April, Markham wrote:

As a result of recent experience at the Birds Point-New Madrid Floodway, I am now of the opinion that no plan is satisfactory which is based upon deliberately turning flood waters upon the homes and property of people, even though the right to do so may have been paid in advance. I believe that all lands within the floodways proper, for which the purchase of flowage easements is now authorized, should be secured by the United States in fee simple, and their future use limited to purposes not in conflict with the requirements as floodways.

One possibility, he reiterated, was that the Department of Agriculture or some other agency secure the lands for use as national forests, wildlife refuges, or some similar purpose. However, Markham went on to say that mineral, timber, and perhaps other rights unnecessary for flood purposes should not be acquired. Neither should land occupied by public utilities.⁴⁵

While unquestionably the experience at Birds Point caused the Corps to reevaluate its position on fee simple options, other factors may have encouraged a policy shift. In February 1937, General

Ferguson observed in a memorandum that had the Morganza Floodway been in operation the flood could have been lower by several feet, and he emphasized that the Morganza Floodway "is the one objective that must not be obscured."⁴⁶ He then went on to say:

The present law should be amended so as to authorize the Chief of Engineers to purchase in fee simple all the lands and land rights required in the authorized floodways. This will eliminate any limitations as to operating floodways except for the best results. The paragraph requiring acquirement of 75% of the flowage rights should be entirely eliminated from the law and another paragraph substituted leaving out this requirement. With the authority vested in the Chief of Engineer to acquire all these floodways, the objection of the State of Mississippi to constructing the Morganza Floodway at once will, perhaps, be eliminated.⁴⁷

There is little doubt that Ferguson communicated these thoughts to Markham or that by the beginning of 1937 they roughly corresponded with Markham's own ideas. The Corps believed that it must construct the Morganza Floodway as quickly as possible and be offered the maximum latitude in operating the floodway.

The White House supported the acquisition of fee simple options. In a cover letter to Markham's report, President Roosevelt wrote Chairman Whittington that securing fee simple title to floodways is advisable "in order that no questions may arise if it is found necessary to flood these lands," a pointed reference to the dispute over the Birds Point-New Madrid Floodway. He suggested that the land thus acquired could be rented to "neighboring farmers, with the definite understanding that tillage of these lands is solely at the risk of the individuals renting them." However, Roosevelt was not ready to champion all the general recommendations of the report—especially recommendations for constructing 45 flood control reservoirs in the Ohio River Valley and 24 flood control reservoirs on the western tributaries of the Mississippi—and he advised Whittington that he intended to have the report reviewed by other concerned federal agencies.⁴⁸ Both privately to his Cabinet and publicly in a message to Congress, the President expressed the wish that regional multipurpose resource plans be drafted that would, among other matters, integrate into a comprehensive package for each region all of the objectives of water management, such as flood control, reforestation, and wildlife protection.⁴⁹

The Corps found itself in a confusing situation. Markham opted for fee simple options in April and less than three months later instructed Ferguson not to pursue that strategy. The President's endorsement failed to convince Louisiana politicians. Senator Overton shared the concern of local officials that they would lose tax revenue if the federal government took over the land. He hinted in mid-September that, while the purchase of the Morganza Floodway in fee simple might be justified, only flowage easements were necessary in the West Atchafalaya and Eudora floodways.⁵⁰

The 1938 and 1941 Flood Control Acts

ON 30 JANUARY 1938, Senator Overton introduced an amendment to his 1936 legislation. It provided that work could begin on the Morganza Floodway as soon as 75 percent of the options had been secured, regardless of the status of the Eudora Floodway. The amendment also specified that the options should cost no more than \$1.5 million. "Is it not bad enough," he rhetorically asked in a memorandum he wrote the same day, "that Louisiana must bear the burden and sacrifice entailed by these floodways without having Mississippi to dictate when and how and in what order they shall be constructed?"⁵¹ Regardless, the Mississippi delegation continued to try to "dictate." Senator Theodore G. Bilbo, the state's junior senator, charged that Overton's bill was a breach of faith. To that, Overton replied that Mississippi "has been meticulously taken care of in all flood control legislation" and noted that the Yazoo Basin reservoirs in Mississippi were to be built almost entirely at federal expense as a consequence of language included in the 1937 Flood Control Act. "It is to be hoped, therefore," Overton concluded, "that Mississippi will not maintain a selfish attitude concerning the construction of the Morganza Floodway."⁵²

Overton received the full support of the Corps of Engineers and the War Department. However, the early options on floodway land, good for two years, were about to expire. If work on the Morganza Floodway did not begin soon, the options would have to be renegotiated. Chief of Engineers Schley insisted that construction should begin on Morganza regardless of whether the Eudora Floodway was built or not.⁵³ Nevertheless, Representative Whittington continued to insist on linking construction in the two floodways. To accelerate progress in the Eudora Floodway, he sought an amendment to authorize the Corps to initiate condemnation proceedings whenever necessary. "If a green light

is given for the work to proceed on the Morganza Floodway," Whittington asked General Ferguson, "should not construction on the Eudora Floodway also have a green light?" Ferguson countered that the more urgent situation was at the lower end of the Mississippi valley.⁵⁴ As for the Eudora Floodway, Major Lunsford E. Oliver, Vicksburg District engineer, shocked the House Flood Control Committee by undiplomatically suggesting that if the people in the floodway did not accept the plans of the Army Corps of Engineers, "they are just damn fools."⁵⁵

Predictably, several amendments were offered to Overton's legislation. In fact, Overton amended his own bill in mid-April by inserting the word "flowage" before the word "options" and by providing the Chief of Engineers with the authority to change the design and location of the Morganza Floodway. This latter measure responded to Corps suggestions that the Morganza intake control structure could probably be reduced in size from that specified in Markham's original report and authorized in the 1936 legislation. The requirement for flowage rights, Overton explained, was in accordance with the 1936 act. What barely required mentioning is that it also conformed with the wishes of the Louisiana delegation, but it disappointed General Schley, who—ignoring the political passion—argued that acquisition in fee simple possessed real advantages even if it cost more.⁵⁶

Senator Bilbo, echoing Whittington's views, offered an amendment that gave the Chief of Engineers the same authority in the Eudora Floodway as Overton's amendment gave him in the Morganza. Bilbo's draft explicitly authorized the Chief of Engineers to acquire either flowage easements or land in fee simple title in both floodways. Arkansas Senator Miller (the former representative) introduced an amendment requiring the federal government to "forthwith acquire by purchase or condemnation...flowage rights for all flood waters that will pass by reason of diversions along the Mississippi River south of the Arkansas River and along the Atchafalaya Basin." These proposed amendments worried the Corps, for condemnation proceedings often led to greatly increased costs and uncertain government estimates, especially when both the value of the land and the area entitled to compensation had not been determined.⁵⁷

Overton knew that any chance of passage for his revision depended on Whittington's support in the House. The Flood Control Committee chairman expressed his irritation over Overton's changing position on the Eudora Floodway. He accused the senator of reversing himself and now appearing to oppose the construction of the Eudora Floodway, but

Overton's position was more equivocal than this. His support certainly had waned, but he continued to support construction under existing law and that meant that he (and the rest of the Louisiana delegation) opposed using condemnation proceedings at Eudora. Considering landowner opposition, Overton's position appeared to doom the Eudora Floodway, but it allowed Overton to maintain that he had not backed away from his view in 1936.⁵⁸ Whittington emphasized that Generals Schley and Ferguson continued to support Eudora despite the success of Ferguson's cutoff program, which had increased the carrying capacity of the Mississippi River in the Eudora area from approximately 1.9 million cfs to 2.15 million cfs. If condemnation proceedings were necessary, so be it.⁵⁹

During the second week of May, Whittington and Overton resolved their differences. The compromise provided for immediate construction of the Morganza Floodway, where the Corps could obtain either flowage easements or land in fee simple. In contrast, the Corps was to obtain only flowage rights in the Eudora Floodway. However, in both floodways the Corps would be authorized to use condemnation proceedings if property owners refused to sell. The compromise eliminated the requirement that 75 percent of the flowage easements in both floodways be obtained before construction. The Chief of Engineers was given total discretion to design the control structure at the Morganza Floodway as the Corps saw fit and to extend the Eudora Floodway levees southward. The Morganza Floodway was not to be operated until the Wax Lake Outlet into Atchafalaya Bay was completed, and the Corps was authorized to purchase flowage easements "over all lands not subject to frequent overflow in the Atchafalaya Basin below the latitude of Krotz Springs."⁶⁰

On 9 June, just before voting on the bill in the Senate, Overton made further changes. From the Senate floor, he offered an amendment to delete the authority to purchase land in fee simple in the Morganza Floodway; all land was to be acquired by easement only. His only explanation was that the amendment met "with the approval of the Chief of Engineers." In a House-Senate Conference Committee, Whittington agreed to this change, and the entire section dealing with the lower Mississippi was passed by Congress in mid-June as part of the 1938 Flood Control Act. President Roosevelt signed the act on 28 June.⁶¹

No documents apparently exist to explain Overton's change of mind regarding fee simple purchase, but he was probably persuaded by Atchafalaya Basin residents who continued to dislike selling their land even though they generally agreed to sell flowage easements to the



Wax Lake Outlet in 1973. Atchafalaya Bay appears in the distance.

government. Opposition to fee simple purchase may have also partially resulted from a technical amendment included in the final legislation. The amendment limited the compensation to states and local subdivisions for lost tax revenue when the federal government acquired land in fee simple. For his part, General Schley may have reconsidered his support of fee simple purchase because the approach would probably involve acquiring over 200,000 acres of land in the Morganza Floodway through condemnation proceedings.

The "Battle of the Floodways" did not end in 1938. As cutoffs gradually increased the Mississippi River's carrying capacity, Arkansas and Louisiana opposition to the construction of *any* floodway in the area between the mouths of the Red and Arkansas rivers steadily grew. Responding to this agitation, in August 1939 and March 1940, respectively, the House Committee on the Flood Control and the Senate Committee on Commerce passed resolutions requesting the Corps to reexamine the project for the lower Mississippi River. Thereupon, the Mississippi River Commission, under the direction of Brigadier General Max C. Tyler, Ferguson's successor, submitted a report to the Chief of Engineers in March 1941 that conceded that the Eudora Floodway was no longer essential.⁶²

The MRC report noted that in 1928 the Corps estimated that the river could carry 1.95 million cfs in its middle section, whereas now

that same section could carry about 2.6 million cfs as a result of the cutoffs. "Had these conditions existed in 1928," the report continued, "serious consideration quite probably would have been given to confining the project flood between the main line levees, for to do so would not have involved such substantial increases in levee heights as were then estimated."⁶³ The commission then outlined various plans for the middle section. They ranged from building the existing project (Eudora), to building a narrower floodway or one confined to its northern section, to a levees-only plan with the freeboard (height of levee above the project flood flow line) confined to one foot on levees on both banks, to a levee plan that would increase both west and east bank protection by elevating the West Bank Levee grade to three feet above the 1927 flow line and the East Bank Levee grade to six feet above the same flow line. This last plan, explained the MRC, would elevate the west bank grade to a level flush with a flow line that engineers predicted would not occur more than once in 215 years. The flood that would rise flush with the one-foot freeboard would not occur more than once in 168 years, the engineers calculated.⁶⁴

Of course, as General Schley admitted in his letter transmitting the MRC's report to the Secretary of War, the problem with the Eudora Floodway was not that it was unacceptable to the engineers but that it was "unacceptable for other reasons to interests in Arkansas and Louisiana."⁶⁵ The fact that the commission had listed the existing project as one of several acceptable alternatives reaffirmed that position. The Corps accepted these "avenues of modification," General Schley stated, and left "to the wisdom of the Congress the decision as to whether and to what extent the present project is inequitable and requires modification."⁶⁶ The message was clear: the Corps had done what it could; the remaining decisions were political, not technical.

Senator Overton and Representative Whittington were eager to resolve the matter. Overton had already proposed an amendment in April 1940, that would have required six-foot freeboard on middle section levees on both banks of the Mississippi River. The amendment, he explained to a constituent, "while not legislating the Eudora Floodway out of existence releases the \$103,000,000.00 dedicated exclusively to the construction of the Eudora Floodway and thereby sounds its death-knell."⁶⁷ The following February, he introduced a bill that went a good deal further. It abandoned both the Boeuf and Eudora floodways, authorized the Chief of Engineers to "obtain net grades of existing front line levees" to whatever height he thought advisable to protect against the project flood (thereby Overton changed his position on the six-foot freeboard level), authorized the enlargement of the

levee on the south side of the Arkansas River, and stipulated that "from time to time additional protection against floods shall be given simultaneously to, and equitably distributed between, the Yazoo River backwater area and the Red River backwater area under such plans as may be approved by the Chief of Engineers."⁶⁸ In presenting his bill, Overton believed that he would save some 2 million acres of farmland from being lost to the Eudora Floodway and reduce construction costs by millions of dollars, an especially appealing feature to congressional conservatives.⁶⁹

Whittington's Flood Control Committee held hearings on a new flood control bill in April and May of 1941, which included testimony relating to the lower Mississippi. During this time, several compromise solutions emerged to provide substantial flood protection to Yazoo Basin residents while eliminating or minimizing the sacrifice of Louisiana and Arkansas residents on the other side of the Mississippi River. General Tyler wired Whittington and Overton on 14 May proposing a solution that combined two options in the MRC report. The solution involved constructing east bank levees to a net grade six feet above the 1927 flood flow line (which equaled one foot above the project flood) and raising the west bank levees to a net grade of three feet above the same flow line. After that, the west bank levees would be raised another three feet to equal the east bank levee height. Most important from Overton's point of view, the scheme eliminated the Eudora Floodway.⁷⁰

Overton took Tyler's plan and modified it further. In place of his earlier bill that authorized the Chief of Engineers to raise the levees to whatever height he thought advisable, Overton now proposed to raise the west bank levees to six feet above the 1927 flood line and the east bank levees to eight feet above the line, thus giving more protection to Yazoo Basin residents than even Tyler had provided. The floodway, of course, would be abandoned, and more protection would be provided the Yazoo and Red River backwater areas as recommended in the MRC report. Arkansas and Louisiana interests immediately accepted this compromise, and, although initially reluctant, at the end of May Whittington did too, accepting the argument that the cutoffs allowed for building higher main stem levees. Some \$103 million appropriated for the Eudora Floodway was released to finance the modified project. The agreement was incorporated in a \$260 million flood control bill reported out of the House Flood Control Committee on 29 May.⁷¹ The House passed the legislation on 20 June, the Senate on 28 July, and President Roosevelt approved it on 18 August 1941. The "Battle of the Floodways" was officially over.

Morganza Floodway Construction

BY MID-1940, THE CORPS HAD OBTAINED offers to sell comprehensive easements on 80 percent of the total land value of the Morganza Floodway and had actually completed payment for easements on 50 percent.⁷² The Corps acquired these easements in perpetuity:

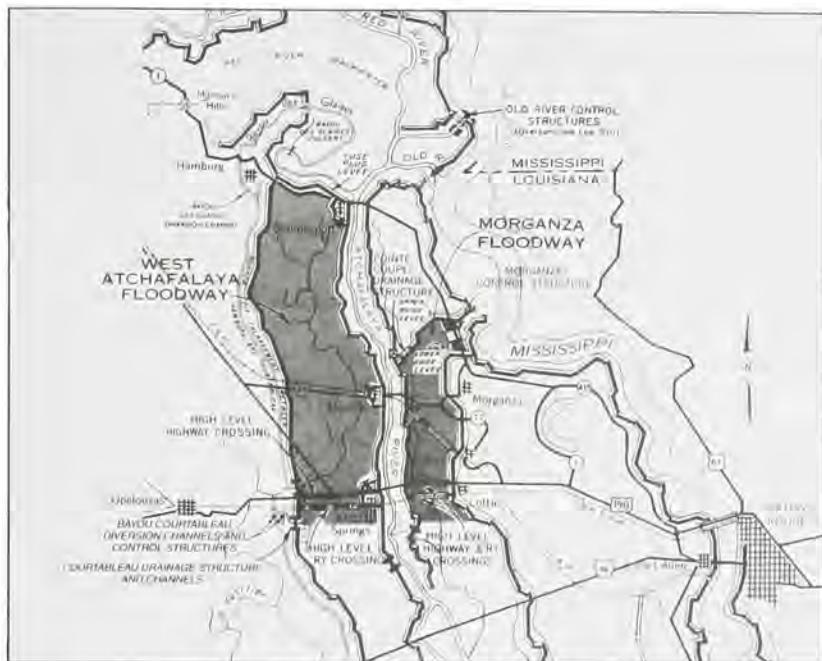
for the purpose of utilizing same as a floodway; or dredging out any channel or channels; or depositing dredged spoil and the water carrying same; of building any levees or other embankments, bridges, or other structures; of overflowing by flood waters of the Mississippi River or its tributaries, or by other waters at any time and for any length of time....⁷³

The deed also allowed the Corps to build railroad and highway crossings "elevated or otherwise" and to supervise the pasturing of animals and the removal of timber.⁷⁴ A later version of this easement allowed the Corps "to do any and all other acts or work that may be advisable or incidental to or in connection with the construction, maintenance and operation of the floodway."⁷⁵

**Atchafalaya Basin Floodways
Flowage Easements Obtained (c. 1939–1955)**

West Atchafalaya Floodway	154,000 acres	Simple Easement —unencumbered overflow —government has access
Morganza Floodway	72,000 acres	Comprehensive Easement —use as floodway —dredge channels —deposit spoil —construct levees and embankments, bridges, and other structures —no buildings for human habitation —permits for farming, grazing, removal of timber and minerals

Source: "Resumé of Real Estate Interest Held by the United States in the Atchafalaya Basin," 1979, New Orleans District files, Office of History, Headquarters, U.S. Army Corps of Engineers.



Morganza and West Atchafalaya floodways.

Clearly, such easements discouraged settlement or land development. One journalist wrote of the floodway in 1951, "Vultures roost where chickens once perched and partridges dart from brush where pigs once grubbed for roots.... A quarter-century ago, farmers scraped at its soil and, each spring, watched warily as the swollen Mississippi rampaged to the Gulf of Mexico. Today, the farmers are gone—all but a few squatters."⁷⁶ Befitting her future profession, a law student more succinctly noted in 1982, "As can be expected, not much goes on in the Morganza Floodway." That year the Corps reported that within the floodway two people resided, 3,000 cattle grazed, and 100 structures existed.⁷⁷

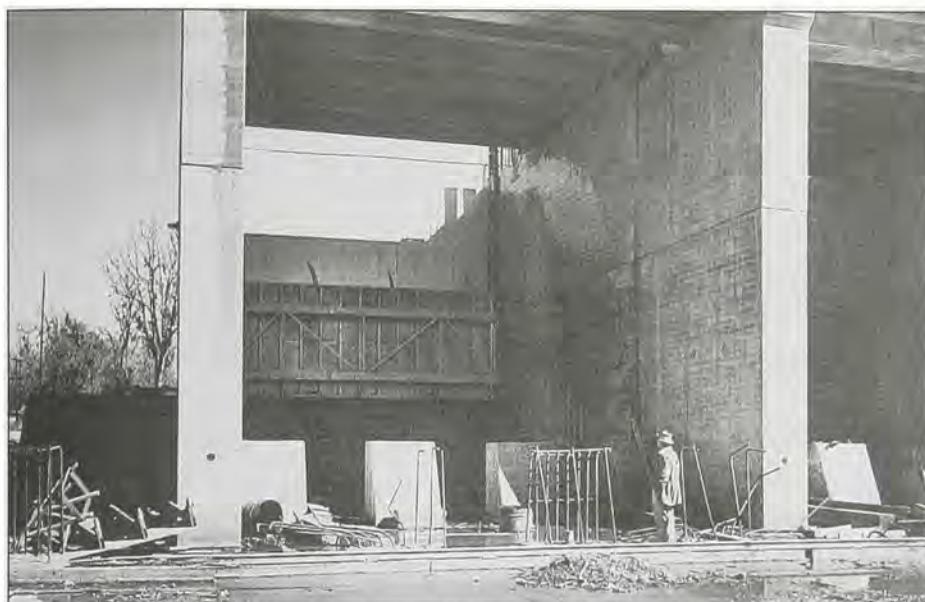
Work on the guide levees went quickly. By September 1940, the upper guide levee had been completed, and two months later, the lower one was too.⁷⁸ Highway and railroad relocations were a major challenge. The New Orleans District negotiated with three different railway companies—the Missouri Pacific; Texas and Pacific; and New Orleans, Texas and Mexico—as well as with the Louisiana Highway Commission. Beginning in late 1937 or early 1938, these negotiations covered every feature of the high-level rail and highway crossings to be built by the federal government. Engineer designs reflected careful calculations about the appropriate elevations needed to protect highway



Morganza Floodway intake structure under construction, 1951.

and rail transportation from floods, the length of bridge crossings, railway alignments, and potential scouring. Extensive pile tests along the proposed rail and highway crossings provided data necessary for safe and economical designs. The railroad companies eventually accepted the Corps' proposal that the bridge crossings consist of trestles and occasional girder spans, similar to the crossings over the Bonnet Carré Spillway near New Orleans. To prevent major scouring, General Schley insisted that trestle construction be based on a flood velocity that exceeded by 25 percent the average velocity projected by the Corps.⁷⁹ The Louisiana Highway Commission and the various railway companies designed the highway and railroad embankment sections.⁸⁰

The Corps had been anxious to complete the Morganza Floodway, but fate intervened. Soon after America entered World War II, the War Production Board directed that all but the most essential, defense-related work stop. However, the Corps had already started the high-level crossings for the New Orleans, Texas and Mexico Railway and for State Highway 190 from Lottie to Krotz Springs. The War Production Board allowed their completion, but the work slowed. By the end of 1944, the high-level railway crossing was in use, but the highway needed more work. This project was not completed until May 1948. Costing \$5 million, the four-lane highway was a full 25 feet above the old road, and included a five-mile bridge.⁸¹ By the early 1950s, the



Morganza Floodway intake structure under construction, 1952.

highway had been extended west across the West Atchafalaya Floodway to Courtableau and included three trestles totaling 7,500 feet in length.⁸²

The major delay caused by the War Production Board directive was the construction of the intake control structure for the Morganza Floodway. In an emergency, the floodway could be used without the intake structure once the guide levees had been completed. Indeed, after severe Mississippi River flooding in April 1945, just such a situation seemed probable. However, after much deliberation, General Tyler decided against using the floodway.⁸³ Once the war ended, other factors delayed construction. For one thing, extensive model testing at the Waterways Experiment Station resulted in a major design change. To regulate the flow through the structure, the Corps decided to use gates rather than needles whose length presented potential operating problems. The tests also helped the Corps determine the width of the gate openings, the length of the stilling basin, and the location and size of baffle piers (to slow water velocity) and the end sill. Finally, as a result of both the cutoffs and the increased carrying capacity of the Atchafalaya River, the tests demonstrated that the floodway could only take a maximum of 600,000 cfs during the project flood rather than the 650,000 first contemplated.⁸⁴

Congressional delays in appropriating funds also delayed the project. Not until 1949 could construction begin on the intake



Completed Morganza Floodway intake structure (outflow side).

structure. Completed in early 1953, and costing \$20 million, the reinforced concrete edifice consists of 128 gated openings, each 28 feet, 3 inches wide, separated by piers 3 feet wide and 33 feet high. Each of the openings has a steel vertical-lift gate, and two gantry cranes sit on top of the structure and operate the gates.⁸⁵

The completion of the Morganza intake structure marked the final demise of the Jadwin Plan as originally conceived. For 20 years, the plan had undergone modifications—decisions to pay for flowage easements in the floodways and for levee rights-of-way on the tributaries, Ferguson's successful cutoff experiments, the replacement of the East Atchafalaya Basin Floodway by the Morganza Floodway, and numerous less significant revisions. In the end, the politicians, not Jadwin, had it right: Jadwin's plan was only a beginning. It unrealistically assumed that local residents would willingly part with their land, and its somewhat hastily drafted conclusions relied on clearly inadequate hydraulic and geotechnical data. Political realities and empirical advances compelled change.

This does not mean that the Jadwin Plan was unimportant. Indeed, just the reverse is the case, for Jadwin lowered conceptual and institutional barriers that had constrained the Corps' flood control policy for years. His plan replaced the levees only policy with one that allowed for both the confinement and release of floodwater. It was a

major theoretical advance, dramatically breaking with the Corps' earlier approach, and it stimulated new ideas in the planning and design of flood control projects. Still, the Jadwin Plan required extensive testing and change before Congress and the American people would completely accept it. Fortunately, Jadwin was no longer Chief of Engineers in the 1930s when his plan was being revised. Considering his stubbornness, he surely would have promoted his plan in the same way Andrew Humphreys had insisted on his levees only policy nearly 70 years earlier. Instead, his next three successors—Brown, Markham, and Schley—accepted significant modifications.

With congressional support in place, the Corps accelerated activity in the lower Mississippi valley. Had World War II not intervened, both construction and real estate acquisition would have been completed sooner. Finally, 25 years after Jadwin drafted his plan and 125 years after General Land Commissioner George Graham first proposed an Atchafalaya Floodway, the Corps appeared ready to control floods along the lower Mississippi River. However, the appearance was an illusion. Just like any battle, the fight to control the Mississippi could be won on one flank while defeat loomed on the other. As the finishing touches were being put on the Morganza Floodway, the Corps turned its attention to a potentially apocalyptic battle farther upstream. At Old River the Mississippi River threatened to jump channels and set a new course down the middle of the Atchafalaya Basin.

Part III

The Burdens of Responsibility



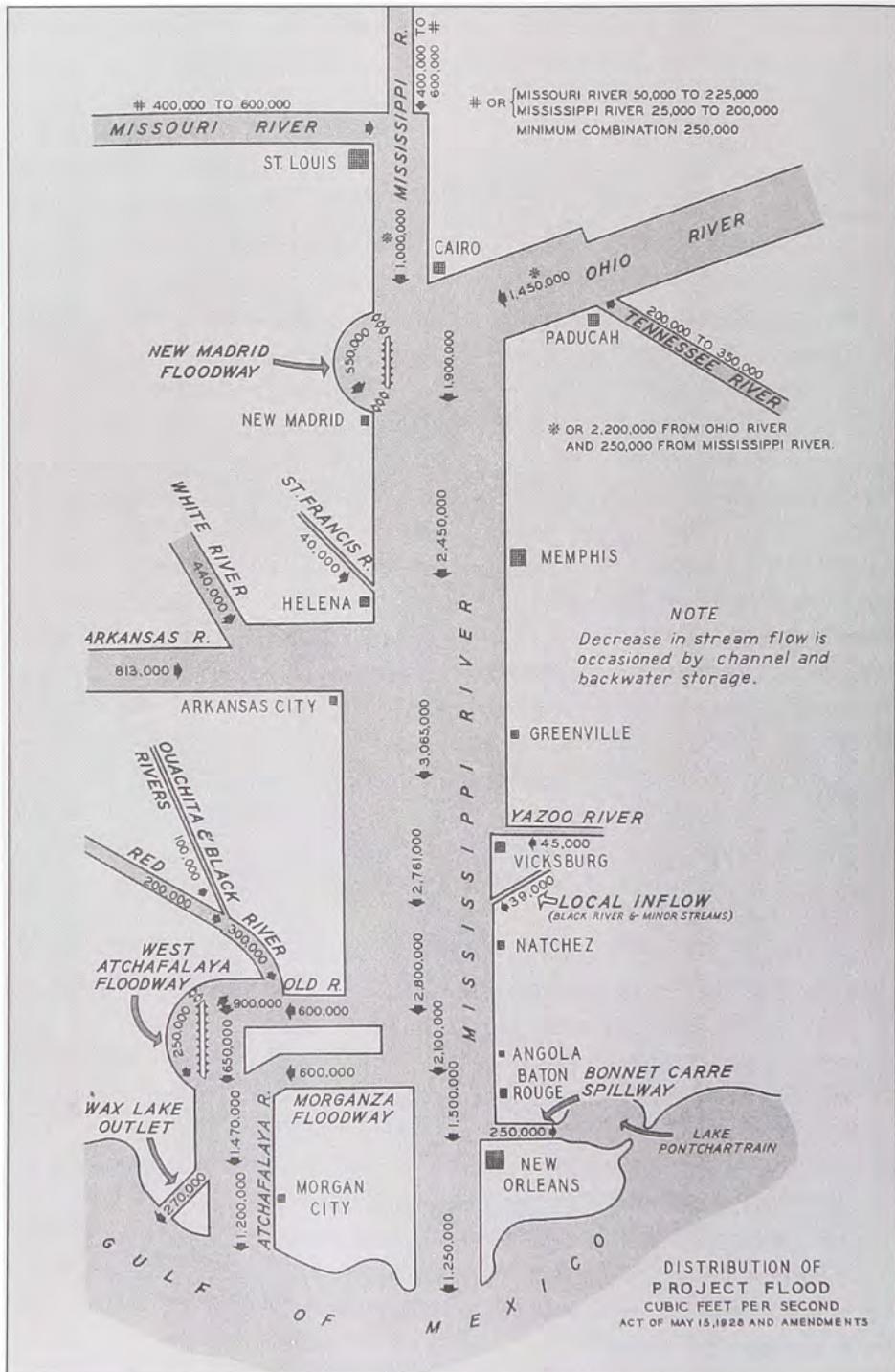
Chapter 7

The Old River Problem

BY THE END OF 1941, contours of the modern Atchafalaya Basin floodway system had emerged. Although the Morganza Floodway intake structure was not yet in place and some gaps remained in the levee system, most of the guide levees had been built, as had the levees along the banks of the Atchafalaya River. The East Atchafalaya Basin Protection Levee stretched a bit over 90 miles from Morganza to Morgan City. The upper guide levee for the Morganza Floodway measured 11.6 miles. On the opposite side of the basin, the protection levee for the West Atchafalaya Floodway extended nearly 74 miles from Bayou Courtaleau to Bayou Teche. The levee along the west bank of the Atchafalaya River was 77.9 miles long and along the east bank, 51.9 miles. Additionally, levees bordered Wax Lake Outlet, which was almost completed except for the construction of power lines and railway and highway bridges. The Corps had encircled Melville with a full dimension ring levee and at Simmesport was improving a subgrade emergency ring levee it had earlier constructed. The agency finished constructing the front levee and floodwall for Morgan City by the end of the year.

To improve and regulate drainage, as authorized in the 1936 Overton Act, the Corps was also constructing a floodgate at Charenton (to regulate the flow between the Atchafalaya Basin and Bayou Teche) and control structures on the east and west diversion canals for Bayou Courtaleau. Intermittent dredging continued on various channels. Although over 128 million cubic yards had been dredged in the Atchafalaya Basin by June 1941, the Corps estimated that the work was not yet half finished. The dredging included the creation of eight channel cuts by 1941: Butte La Rose, 3.4 miles; Cow Island, 0.4 miles; Lake Fausse Point, 9.7 miles; Bayou Chene, 1.2 miles; Whiskey Bay, 9.6 miles; Lake Mongoulois, 4.1 miles; Chicot Pass, 11 miles; and Blind Tensas, 1.5 miles.¹

In a sense, the Corps of Engineers had turned the Atchafalaya Basin into an elaborate plumbing system. Perhaps unintentionally, the Corps reinforced this perception when it printed a diagram of the Mississippi



The Mississippi River Commission published this 1952 schematic map showing the distribution of the project flood.

River and Tributaries Project. The drawing showed the volume of inflow during a project flood coming from the Mississippi's western and eastern tributaries and the amount of outflow exiting through the river's mouth, the Bonnet Carré Spillway, and the Atchafalaya Basin. Using mainly angles and straight lines, the illustration could as easily have been a diagram of an urban stormwater system. It was a closed system; like water in a pipe, the project flood flowed through this system under the direction of the Corps of Engineers. To the public, the diagram expressed confidence that the lower Mississippi was either under control or soon to be. Yet, as the years passed, the engineers became aware that disaster threatened.

Nature Takes the Low Road

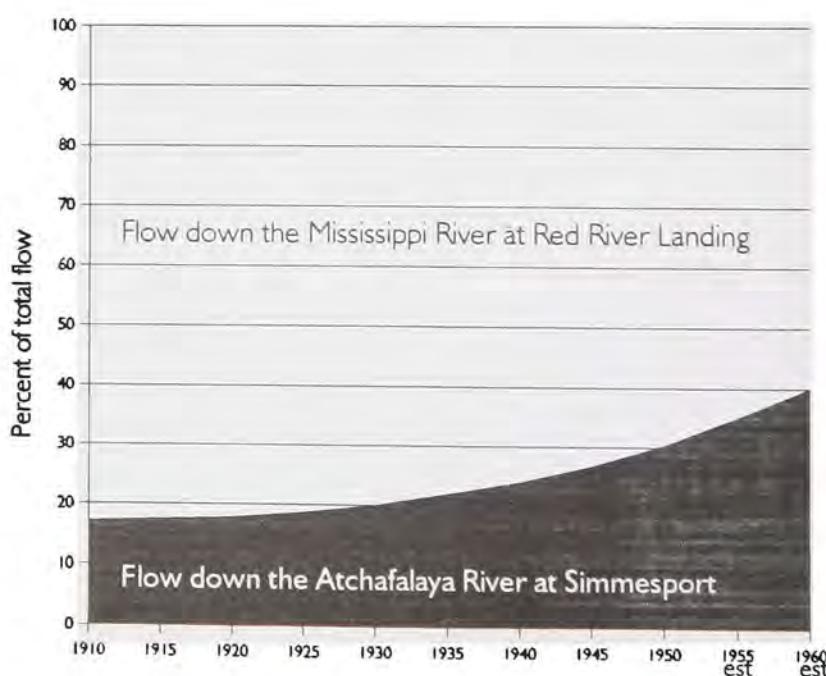
BEGINNING IN THE EARLY NINETEENTH CENTURY, the engineers who fashioned the levees along the Atchafalaya River and, after 1928, around the basin itself became increasingly concerned over a potential cataclysm: that the Mississippi River would abandon its present course and redirect its entire flow into the Atchafalaya River channel. At best, New Orleans and Baton Rouge would be ports on a saltwater estuary that constantly required dredging. Saltwater intrusion from the ocean would totally destroy New Orleans' water supply, substantially alter the natural environment, and possibly render the Crescent City uninhabitable.² The ability of large ocean-going vessels to reach Baton Rouge would be problematical, depending on the Corps' ability to dredge a deep enough channel and the willingness of the federal government and local interests to pay for it. As for Morgan City, its survival would be a miracle.

In 1812 Army officer Amos Stoddard had cautioned that the Atchafalaya might capture the Mississippi once the raft obstructing the Atchafalaya was removed. Then Captain Shreve made his cutoff at Turnbull Bend in the 1830s. The Atchafalaya River raft stopped growing, but less Mississippi River water entered the Atchafalaya. Instead, the water remained in the main stem channel and continued on past New Orleans to the Gulf of Mexico. However, after state engineers cleared the Atchafalaya of the raft's last remains, just as civil war engulfed the nation, more Mississippi River water flowed into the Atchafalaya during high water season. The upper limb of Turnbull Bend (upper Old River), which had carried Red River water into the Mississippi, silted up after the Civil War, diverting more Red River water into the Atchafalaya. As early as 1847, Louisiana residents had

discussed the option of damming the Atchafalaya, but its use as an escape valve during Mississippi River floods and its value to navigation weighed against the plan. The Atchafalaya was kept open, and the Corps periodically dredged lower Old River to ensure navigation passage.

Meanwhile, levee construction contributed to a substantial enlargement of the upper Atchafalaya River below the two sill dams the Corps had built in 1888–89. In the 1930s, dredging further increased the capacity of this channel; between 1932 and 1941, the Corps removed 91 million cubic yards of material. In contrast, below the leveed channel, as shown during a major flood in 1945, sedimentation worsened conditions.

Leo Odom, a former Louisiana state engineer, wrote in 1951 that when the MRC proposed diverting floodwater into the Atchafalaya Basin in 1927, “it was not acting on theory but on necessity, since it appeared to be impossible for the main [Mississippi] river to be confined sufficiently so that it would carry large floods to the sea unaided.”³ By 1950, natural forces had turned an economic and engineering necessity into a threat, for far more Mississippi River water exited through the Atchafalaya Basin than the Corps had envisioned. During the previous 70 years, the percentage of Mississippi water flowing into Old River had increased from 7 to 25 percent.



The Mississippi had become bifurcated: split into two branches. In the main stem channel, the river traveled a bit over 300 miles from its junction with Old River to the Gulf of Mexico. However, since the distance to the Gulf via the Atchafalaya River was only 140 miles, the gradient through the Old and Atchafalaya rivers was more than twice that of the Mississippi below Old River. The steeper slope meant a greater velocity, and the law of gravity dictated that evermore water would enter the Atchafalaya. Meanwhile, as less water flowed in the main stem channel below Old River, more sediment would accumulate. The Mississippi's bed below the point of diversion would become flatter, and flood heights would increase until the time when the entire Mississippi River flowed through the Atchafalaya Basin. Nature threatened an epic environmental and economic upheaval.

However, local economic concerns in the early 1940s, not engineering nightmares, first prompted the Corps to reexamine the Old River problem. Local residents desired protection against backwater in the lower Red River (Tensas-Cocodrie area). All the backwater areas—the Red, St. Francis, White-Arkansas, and Yazoo—had suffered from the construction of Mississippi River levees.⁴ Before their construction, water spread out over both banks of the river, covering the higher lands, but only to shallow depths and for a short time. However, as levees were built or strengthened along the Mississippi, more water poured into the openings in the levee lines where tributaries joined the main stem. In these areas, more land was flooded to deeper depths for longer periods. Adding to the pain, local residents were often taxed to construct and maintain the very levees that were causing the problems. No wonder, then, that calls came for more protection.

The 1941 Flood Control Act had authorized flood control protection not to exceed \$14 million for the Red River backwater area and had granted broad discretion to the Chief of Engineers to make modifications. The problems he faced were formidable. Unlike the Yazoo Basin, the Red River backwater area did not lend itself to the construction of a comprehensive levee system. The streams that crisscrossed the area provided vital drainage and were too large to block.⁵ They made complete levee protection impractical; costs clearly exceeded benefits. Still, the region's politicians responded, the defunct Eudora Floodway to the north would have protected the Red River backwater region and the local population from potentially extensive damage. Local residents overwhelmingly favored closing Old River to Mississippi River water to relieve the situation, and their congressional representatives believed such action within the authority given to the

Chief of Engineers by the 1941 act. This solution would eliminate the requirement for levee rights-of-way on valuable farmland, leave natural drainage undisturbed, and protect the entire backwater area. On the other hand, the proposal threatened the effective use of the Atchafalaya Basin as an outlet for floods.⁶

In a 1943 report, the Mississippi River Commission recommended the closing of Old River by an earthen dam, constructing a lock to allow navigation from the Mississippi to the Atchafalaya and Red rivers, and constructing a low water diversion structure. The commission also recommended the construction of levees on both sides of Old River that would link with the existing flood control project, except that the levee north of Old River would be lowered by two feet for about 1.25 miles south of Point Breeze. This section would be a fuse plug levee that would crevassé only during a major flood. The Corps calculated that this project would protect an area of 1.2 million acres, 16 years out of every 17, at a cost of \$11 per acre. The commission preferred that to its original proposal (presented in 1941 in House Document 359) that would have protected only 233,000 acres, 34 years out of every 35, at a cost of \$30 per acre.⁷ Still, the report was never

published, possibly because its recommendations relied on the politically controversial decision to operate the Morganza Floodway at bank rather than levee level. Likewise, its reliance on a fuse plug levee also raised concerns.⁸

A major flood in March and April 1945, prompted a more thorough reassessment of the Old River problem. During this flood, Old River reversed its current and flowed into the Mississippi, the last time such a reversal occurred. At that time, the Red River was at a record stage, higher than the Mississippi. Fortunately, the Atchafalaya River had enlarged enough to take far



Max Clayton Tyler (1880–1974) was president of the Mississippi River Commission and Lower Mississippi Valley Division engineer from 1939 to 1945.

more of the Red River floodwater than expected, preventing even higher stages downstream on the Mississippi. Still, the Bonnet Carré Spillway needed to be put into operation, and extensive preparations were made to use the Morganza Floodway. The Corps quickly built levees to protect towns and raised levee heights to prevent overtopping. However, after much deliberation and no doubt some prayer, General Max Tyler, the MRC president, determined that it was not necessary to open the Morganza Floodway.⁹

Although the Atchafalaya's ability to take more water decreased the flood threat to New Orleans and Baton Rouge, it raised concerns that the river might take *all* of the Mississippi River water much sooner than most engineers had thought. The predicament required both engineering and geological analysis. Indeed, the Corps had recognized the importance of geological studies at the Waterways Experiment Station in the early 1930s. By the end of the decade, the need was urgent. By then, the Corps had nearly finished the cutoff program. Its new challenge was river stabilization; engineers needed to know the probability and frequency of Mississippi River meanders and the problems involved in attempting to control them. This required detailed knowledge of the river's recent geological history.

Fortunately, mapping technology had advanced rapidly in the 1930s. Before 1927, accurate maps of the entire lower Mississippi valley did not exist. By 1941, the MRC had prepared topographic maps of the alluvial valley, and Louisiana had issued planimetric maps of the deltaic plain. Aerial photographs of most of the valley were used by the Corps and the crop control program of the Department of Agriculture. These photographs provided valuable information to geologists on present and past land forms. Finally, whereas few geological borings had been drilled in the valley floor before 1927, by the end of the 1930s, more than 16,000 borings had been made. Most were for engineering projects along the Mississippi and its tributaries, water supply, or petroleum exploration. In most cases, public agencies and private companies shared their findings with the Corps.¹⁰

In May 1941, Chief of Engineers Schley authorized a comprehensive geological investigation of the lower Mississippi River. General Tyler appointed Gerard H. Matthes, the WES director, as the general supervisor. To conduct the investigation, Matthes established an independent geological division. To head it, he hired Harold N. Fisk as a consultant. An associate professor of geology at Louisiana State University, Fisk also did research for the Louisiana Geological Survey. Matthes located the geological division in Baton Rouge for Fisk's benefit and provided staff members from WES, the resources of several

other Corps offices, and a massive amount of information garnered from public and private agencies.¹¹

In 1944, the MRC published Fisk's report, which immediately became a classic in geological studies. Perhaps its most important finding was that the Mississippi River was a "poised" stream, showing no tendency to aggrade or degrade its channel. The combination of discharge, slope (the lowest the river had ever obtained), and the particular alluvium through which the river flowed provided the best channel for navigation and flood control that had ever existed in the alluvial valley.¹² Of course, this news delighted the engineers, but they had very little time to enjoy it.

It was natural that General Tyler would turn to Fisk soon after the 1945 flood to ask for professional advice on whether the Atchafalaya really could take all of the Mississippi River water in time. Fisk's response was not reassuring. "There is," he responded, "a definite possibility that the Mississippi River will be captured by the Atchafalaya River." He refused to predict when this might take place without doing further research, but he observed that the quantity of water carried by the Atchafalaya had rapidly increased in the previous few years, commensurate with the accelerating increase in the size of the Atchafalaya's channel. He predicted that this channel enlargement would grow even more rapidly in the future. "Should such prove to be the case, scouring of the channel would be expected to occur upstream in the lower Old River and eventually to cause the capture of the Mississippi."¹³

Geology seemed to have handed the population in the Red River backwater a compelling argument to close Old River, but Colonel Clement P. Lindner, Tyler's deputy (and future chief of the engineering division in the Corps' South Atlantic Division), noted that in the 1942 floods most of the water had come from the Red and Ouachita rivers and very little from the Mississippi. He warned that, while a control structure at Old River would increase the Corps' flexibility to handle flooding, backwater flooding would still periodically continue as a result of high water coming down the tributaries. He believed that this flooding would not be particularly severe, but that would hardly prevent new demands for flood protection.¹⁴ On 13 August 1945, Lindner, evidently assisted by several other Corps civilian and military officials, prepared a memorandum which echoed Fisk's concerns. The memorandum concluded that "a control structure in Old River to prevent the capture of the Mississippi by the Atchafalaya may soon be a necessity."¹⁵ Engineers in New Orleans and Vicksburg had already begun preliminary studies for the project.

At least one voice dissented. Brigadier General Hans Kramer, General Tyler's military assistant, was one of the best educated engineers in the Corps. He had graduated from West Point in 1918 and had earned a doctorate in engineering at the Technical University (*Technische Hochschule*) in Dresden, Germany, where he had studied at the university's renowned hydraulic research center. He later supervised the construction of Conchas Dam in New Mexico and, during World War II, served concurrently as a district and division engineer in Honolulu. From February to December 1945, when he retired, Kramer worked with General Tyler on Mississippi River problems.

Toward the end of July 1945, Kramer submitted a "minority report" on Old River to Tyler. After an analysis of previous studies and experiments, Kramer wrote, "Frankly, I am not persuaded by the present evidence that there is any incipient danger of a change of regimen which would necessitate or justify artificial measures to control the Mississippi's flow into Old River, either at bankfull or higher stages." Kramer credited much of the Atchafalaya's enlargement to the Corps' dredging operations, rather than to any tendency on the part of the Mississippi to seek a shorter channel to the sea. He thought it premature to conclude that future floods would threaten the regimen of the Mississippi and force the river into a new channel. Instead, Kramer suggested that the preliminary studies on Old River be halted and that the construction of the Morganza Floodway be energetically prosecuted.¹⁷

Most Corps officials agreed with Kramer's emphasis on Morganza, but not at the cost of suspending studies on Old River. In 1947, the Mississippi River Commission instructed the hydraulics laboratory at WES to investigate possible control structures at Old River. The investigation focused on damming Old River and excavating an entirely new channel for a control structure to regulate waters between the Mississippi and the Red and Atchafalaya rivers. Based on the investigation, the MRC drafted a plan in 1948 for a lock and control structure.

Meanwhile, Corps personnel discovered that the diversion of the Mississippi River's waters into the Atchafalaya was increasing at an alarming rate. By the end of 1948, about 28 percent of the water from the Red and Mississippi rivers (water originating above Old River) was going down the Atchafalaya.¹⁸ DeWitt Pyburn, a member of the Mississippi River Commission and a former Louisiana state engineer, said that he did not think that the capture of the Mississippi River by the Atchafalaya was imminent, "but we do feel that we've got to do something to stop further enlargement of Old and Atchafalaya rivers."¹⁹

In early 1949, Representatives Otto Passman of Monroe and Henry D. Larcade, Jr., of Opelousas introduced legislation to authorize the construction of a navigation lock and control structure at Old River.²⁰ The legislation drew on the MRC's 1948 study. If anything, the navigation lock generated more controversy than the control structure did. The 1946 Rivers and Harbors Act had for the first time—and without any formal report submitted by the Corps—authorized a navigation project on the Atchafalaya River above Morgan City, a 12-by 125-foot navigation channel, and a new lock at Port Allen just south and across the river from Baton Rouge to replace Plaquemine Lock. Without a report from the Corps, which would have analyzed commercial benefits, it was unclear whether enough waterway traffic existed to justify still another lock farther upstream at Old River, or, if justified, what the dimensions of the lock should be. To add to the confusion, Congress refused to appropriate money for the construction of either the channel or the Port Allen Lock. Under the circumstances, any Corps economic projections were bound to be highly problematical.²¹



The confluence of the Old, Atchafalaya, and Red rivers, 1949.
The Mississippi River is in the background.

In May 1949, Brigadier General Peter Feringa, the new MRC president and division engineer for the Lower Mississippi Valley Division, testified on behalf of the lock and dam at Old River, but he

confined his request for appropriations to the control structure. Feringa estimated the control structure's cost at \$29 million, but thought that the \$14 million authorized in 1941 could be applied against it. Therefore, Feringa requested only \$15 million; appropriations for the navigation lock would presumably come later if the economics justified it. Neither Feringa nor Larcade doubted that the control structure had been approved in the 1941 Flood Control Act under the discretionary authority granted to the Chief of Engineers.²² In the 1950 Flood Control Act, Congress simply increased the amount of money available to \$29 million without specifically saying it should be applied to a control structure at Old River.²³ This vagueness eventually caused the Corps to ask for explicit authorization.

In 1949, work on the Morganza Floodway was approximately a third complete, although construction had just started on the intake structure. As construction proceeded on Morganza, the problems at Old River became the number one priority for the Corps in the lower Mississippi valley. The portion of the Red and Mississippi rivers going down the Atchafalaya continued to increase,²⁴ and the situation was becoming ominous.

General Feringa initiated an in-depth study of the Atchafalaya River to resolve the problem. He discussed the idea with Lieutenant General Lewis A. Pick, the Chief of Engineers, who at the end of September 1950, authorized both the study and the employment of Fisk to oversee the preparation of the study's geological section (by that time, Fisk had become chief of the Geological Research Section of Humble Oil and Refining Company). In an accompanying memorandum, Pick wrote that "we do not wish to continue the practice of alternately increasing and



Brigadier General Peter A. Feringa (1896–1993) was president of the Mississippi River Commission and Lower Mississippi Valley Division engineer from 1949 to 1953.

then decreasing the flows through the Atchafalaya River." He advised that the study be thorough but not formally submitted to Congress.²⁵ Presumably, that would eliminate concerns over political reaction to the report.

Within a few weeks, Feringa had organized a team to prepare the Atchafalaya study. Rodney A. Latimer, chief engineering assistant, headed the team. Charles W. Schweizer, special engineering assistant for the Mississippi River Commission, served as Latimer's right-hand man and eventual co-author. Under Fisk's supervision, Charles R. Kolb of WES, a former student of Fisk's, and Dr. L. J. Wilbert, assistant professor of geology at Louisiana State University, carried out the geological investigations. Willard J. Turnbull, chief of the soils division at WES, coordinated and supervised the layout of borings and the collection of soil and geological data. Members of the Mississippi River Commission made a special boat tour of the Atchafalaya Basin on 23 and 25 January 1951. They also inspected the basin from an airplane on 25 January. As with the earlier lower Mississippi valley geological survey, the study team received substantial assistance and data from federal, state, and local agencies as well as from private companies.²⁶

The findings confirmed the worst fears. By May 1951, Latimer and Schweizer had concluded that "the Atchafalaya—Old River channel will probably become the master stream in about 25 years unless restricted by regulating works."²⁷ Fisk's study, not completed until nearly a year later, told much the same story. Approximately 25 percent of the Mississippi's water was being diverted to the Atchafalaya. By 1971, the Atchafalaya would carry 40 percent of the Mississippi's flow; the critical stage would begin just before this time. Once that stage began, Fisk maintained, "closure of the Mississippi River below Old River will be rapid and diversion will be relatively uncontrollable."²⁸

Seeking Answers

ONCE THE DANGER of a Mississippi River diversion appeared imminent, the engineers and politicians wasted little time in working on a solution. Concerns that no structure could control the powerful Mississippi were rarely, if ever, expressed. Those jeremiads came in later decades, when geologists and environmentalists questioned how a concrete barrier could possibly prevent the Mississippi from doing exactly what it wanted. But in the early 1950s, few expressed anxiety about either environmental consequences or engineering ego; the major issue was economics. At all levels, government wanted to prevent

economic disaster in the lower Mississippi valley and assure that the flood control plan would work as intended.

In the middle of August 1951, Francis B. Slichter, chief of the civil works engineering division in the office of the Chief of Engineers, met representatives from MRC, WES, and the office of the Chief of Engineers to discuss options for controlling the Mississippi at Old River. The following month Slichter advised the commission of his concern that a control structure could fail because of degradation in the tail water channel. He suggested that one or more consultants study this problem and recommend the best overall approach.²⁹

General Feringa quickly responded. On 11–13 December 1951, he called together a group of experts to address two major issues arising from the Atchafalaya River study:

1. How would a retarding or regulating structure or structures affect degradation (enlargement) or aggradation (sediment deposition) of the Atchafalaya River?
2. How would Atchafalaya Basin improvement from Alabama Bayou to Wax Lake Outlet affect degradation in the upper reaches of the Atchafalaya River?³⁰

The attendees were impressive. Feringa, Latimer, and Schweizer were there, of course. Other participants included Eugene A. Graves, chief of the special studies section of the Mississippi River Commission, and two senior engineers from New Orleans District, George H. Hudson and Jerome C. Baehr. Fisk was not there, but Kolb came. Colonel Ernest Graves, the MRC's resident member in the office of the Chief of Engineers, sent his chief engineering assistant, H. Velpau "Val" Darling. Chauncy W. Hearn, the deputy chief of the civil works engineering division, represented Slichter. Donald C. Bondurant, head of the sedimentation section of the Missouri River Division in Omaha, was the only Corps field representative from outside of the Lower Mississippi Valley Division invited to the meeting. One of three consultants chosen by General Feringa to advise the Mississippi River Commission, Bondurant had already supervised important sedimentation studies on the Missouri River and, even earlier, at Conchas Reservoir in New Mexico. He was well respected in the hydraulic engineering community.



Hans Albert Einstein (1904–1973).

The two attendees with the highest reputations were the academic consultants, Hans Albert Einstein and Lorenz G. Straub. Both had previously served as advisors to the Corps on numerous occasions. Einstein, the son of Albert and a professor of hydraulic engineering at the University of California at Berkeley since 1947, had carved out his reputation in the area of sediment transport and river mechanics. He was a good friend of Bon durant, who may have suggested him as a consultant. His most important contribution was his bed-load theory of sediment transport, a complex approach based

partly on empirical studies he had done for the Corps and the Soil Conservation Service. (Bed-load is the weight or volume of sediment rolling along a stream bed in a specific unit time.) When converted into an analytical formula, his theory stimulated further research but proved difficult to apply to practical problems—as research at Old River was to show.³¹

Einstein was engaging and energetic. In contrast, Straub seemed reserved and even aloof to his students, although he was generally amiable around his peers. Straub was director and chief designer of the St. Anthony Falls Hydraulic Laboratory and head of the civil engineering department at the University of Minnesota. Like Einstein, he had also made important contributions to the understanding of the mechanics of bed movement. Since 1950, he had served on the Corps of Engineers Beach Erosion Board.³²

The conference participants considered a surprisingly large range of options to prevent disaster at Old River. However, the discussion first focused on discrepancies in the computations dealing with sediment transport. Using Einstein's formula, Fred B. Toffaleti of the

Mississippi River Commission staff had arrived at a figure for sediment load in the Atchafalaya River that was far less than the amount empirically measured. Toffaleti, Bondurant, and Einstein concluded that a theoretical "Z" factor used in the formula was not proper. A correction based on observed data was necessary. Despite this early setback, Straub and Bondurant thought that the use of theoretical formulas would, in the end, obtain sufficient accuracy. They also agreed that degradation of the Atchafalaya River would continue regardless of whether regulating structures were built. Einstein concurred, adding that calculations were hardly necessary to conclude that the scour in the Atchafalaya channel would progress.³³

The unanimous opinion that degradation would proceed regardless of any reduction of the flow into the Atchafalaya naturally concerned the Corps. The consultants told the Corps that even a sizeable 15 percent reduction in the flow would not stop the degradation, but only slow it. The Corps also feared that dredging would contribute to degradation; but Straub, supported by Bondurant and Einstein, thought that lowering flow lines by two feet to accommodate the project flood, as the Corps desired, was "probably inappreciable" in the total picture. To remedy the situation, the consultants agreed that a major control structure was necessary. Sill dams were less cost-efficient and more risky.³⁴

The discussion turned to the construction of a control structure close to where the Mississippi met Old River. The two options closely considered were the erection of a gated control structure versus the development of a project that essentially constricted the flow. Bondurant, Einstein, and Straub all supported the building of a gated structure, somewhat like the Morganza intake structure, although Straub seemed to waver later. At the time, the three experts doubted



Lorenz George Straub (1901–1963).

that any other plan would be adequate. To a question about whether the Mississippi River might degrade below Old River once a control structure was built, the authorities could give no definite answer, suggesting instead that more studies and tests be done.³⁵

Discussions continued on 9 February in the conference room of the New Orleans District. The same attendees were present except that Slichter replaced his deputy, Hearn. As with the last meeting, this one began with a discussion of Einstein's bed-load formula and various aspects of sediment transport in the Atchafalaya River. The dialogue became rather technical, and at one point Straub tried to bring the participants back to the actual problem. "I am just wondering what we are attempting to show," he said. "Are we attempting to show that here is a method of calculation, or here is a calculation which indicates the amount of material transported in suspension by the river at a certain point?" To this, E. J. Williams, Jr., of the Lower Mississippi Valley Division answered that they were trying to find out "what is likely to happen to the river."³⁶ More helpfully, Bondurant pointed out that any computation will depend on "what we interpret as bed material." In short, the engineers could not agree on how the material was actually moving in the channel, or to what extent bed-load depended on location or size, and until they did, they could not answer many other questions.³⁷

Historical hindsight casts these conferences in a rather ironic context. In the years following, the controversy over the Old River Control Structure almost invariably centered on the structure's ability to survive floods, earthquakes, or some other disaster and ensure that the Mississippi remains in its channel. These questions, however, provoked little comment among the experts gathered in Vicksburg and New Orleans. Building a structure capable of diverting the proper amount of water was not the issue; diverting the required, or at least the maximum possible, amount of *sediment* was. Essentially, Straub argued, to stop Atchafalaya River degradation it would be advantageous—though probably insurmountably difficult—to convey a substantial amount of sediment through the control structure. If that were not possible, then the next best option would be to limit the total amount of water that annually flowed through the structure. This approach, too, would tend to provide a "flatter equilibrium condition," that is, stop the degrading. The more sediment and the less water flowing into the Atchafalaya River, the more clear water would course down the Mississippi, improving the main stem channel that passes Baton Rouge and New Orleans.³⁸

While Einstein and Straub differed on how to calculate equilibrium conditions, they generally agreed on the kind of control structure that was needed. If anything, Einstein stressed more than Straub the importance of sending Mississippi River sediment into the Atchafalaya. Were the sediment to remain in the Mississippi, he insisted, the Mississippi would sooner or later change its channel.³⁹ Both men thought that the structure would be expensive, especially if the Corps tried to control the sediment as well as the water running through it. How much sediment a structure could actually control would need to be verified through model testing and experiments. Essentially, the objective should be to maintain the status quo; the structure would have to divert as much sediment into the Atchafalaya River as occurred naturally. Mainly because of the need to capture so much Mississippi River sediment, the three consultants agreed that not only should the structure be close to the Mississippi River, but at the point where the maximum amount of sediment could be diverted (although Einstein maintained that it could be built in the Atchafalaya River too if necessary). The practical consequence of this decision was that the consultants arrived at the same conclusion that WES personnel had: the Corps needed to dam Old River, allowing for the construction of a navigation lock, and put the control structure in an entirely new channel linking the Mississippi with the Red River just above where the Red joined the Atchafalaya.⁴⁰

Naturally, the consultants and the Corps were concerned about the impact of the control structure on the Atchafalaya River's ability to carry the 1.5 million cfs project flood. Latimer told the group that at the present moment the river could probably not even carry 1 million cfs. Ignoring environmental ramifications, Einstein suggested that the Corps prevent water from going into side channels in order to improve the Atchafalaya's main channel. However, most of the conferees seemed to believe that nature alone could not guarantee a sufficient channel. Dredging would be necessary. The consultants recommended further study to ascertain the exact impact of a control structure on the Atchafalaya River.⁴¹

The conferences starkly revealed the ambiguous world of the hydraulic engineer. The world embraced scientific research, especially in fluid mechanics, but fluvial hydraulic theories often vexed engineers. The theories possessed limited predictive power and almost invariably required modification when applied to specific circumstances or projects. About 2,500 years ago, Heraclitus had observed, "There is no stepping twice in the same river." Research in the twentieth century showed just how right he was. Nevertheless, before engineers designed

and constructed, they needed to consider and, where appropriate, apply theory.

Einstein's work reflected these problems. Converting his empirical research into theory involved years of research, but gaining acceptance of his theory proved an even greater challenge. Gradually, through the efforts of engineers such as Einstein and Straub, river engineers developed an appreciation of the mechanics of sediment transport. Essentially, at a time when computers were still in their infancy, the problems involving Old River could be resolved only through careful empirical research, three-dimensional modeling, and trial and error. Also, the work tended to be integrative rather than reductionist; necessary data came from many associated disciplines.

The next meeting, in Vicksburg on 25 August 1952, included representatives from the office of the Chief of Engineers and the Lower Mississippi Valley Division (Mississippi River Commission). Straub, Einstein, and Bondurant were absent. By this time, Fisk had finished his geology report, vital for choosing the best location for the control structure, and Eugene Graves had completed preliminary designs for the control structures. Each design called for two connecting structures. Spanning a new channel to be dredged by the Corps north of Old River, a low sill structure would include about 500 feet of gated weir (like Morganza) low enough to handle medium-stage flows. Complementing the gated weir, a needle weir (similar to Bonnet Carré) would extend over land for around 3,800 feet. This weir could handle higher flows that would pass into the Red River backwater area. The designs were similar except that the Corps considered three possible elevations for the crest of the gated weir—30, 20, and 10 feet msl (mean sea level). Ten feet msl was approximately one foot above the mean low water stage at Old River. The costs for both weirs at the different elevations were, respectively, \$18.9, \$19.7, and \$20.4 million—the lower the sill elevation, the greater the cost, principally because the structure would have to be more massive to hold back the water.⁴² All three designs allowed for the passage of 800,000 cfs, which was about 200,000 cfs more than that required in the event of a project flood.⁴³

The discussion centered not on preventing water from leaving the Mississippi River—the less desirable option Straub had hesitatingly offered—but on ensuring that an adequate amount of water reached the Atchafalaya. Slichter preferred the 30 msl design because, though a higher structure, it was cheaper (although he challenged all the cost figures), simpler, and still could pass the necessary flow. Williams and Latimer strongly defended the 10 msl structure because at 30 msl the structure would cause high water more frequently in the Mississippi,

and the engineers would not be able to divert as much Mississippi water into the Atchafalaya as was presently passing without any structure.⁴⁴ Simply put, the 10 msl structure allowed more operating flexibility.

Before making a final decision, however, the experts still needed to resolve the question of sediment transport. Using Einstein's formula, figures had been recalculated since the February meeting so the theoretical figures matched more closely the numbers obtained in actual sediment measurements. With this modification, Toffaleti had developed daily bed-load numbers for 1943, 1944, 1945, and 1950.⁴⁵ While this impressive work allowed the engineers to understand changes under natural conditions, it was of less help, as Slichter pointed out with some exasperation, in showing exactly how to design the control structure. Determining how much sediment would actually pass through the structure under different flow conditions was a daunting problem complicated by continuing disagreement over how much silt should be allowed into Old River. The consultants, Williams reminded the conferees, generally wanted at least as much silt to pass through as was naturally occurring. Latimer desired a little less. Slichter desired flexibility.⁴⁶

Questions also remained about where and when the silt might settle in the Atchafalaya channel. Slichter assumed that the upper reaches of the Atchafalaya would not begin to fill in until the lower reach had retained a substantial amount of sediment. "We should decide on the necessity of diverting more silt than we do water," he said. "Obviously Old River is now taking more silt in proportion than water. Should we build a structure so that we can maintain it that way?"⁴⁷ Darling thought that "we are definitely dealing with water, not silt," but Slichter reiterated that the Corps must have flexibility in the silt diversion as well as the water diversion.⁴⁸

In the end, Slichter went along with the 10 msl proposal. The Corps experts decided to ask the consultants about the best specific location for the structure, the advisability of a model study, the appropriate angle for the inlet channel, and the proper elevation of the stilling basin. One thing that neither the consultants nor the Corps experts could do, Latimer stressed, was offer advice on how to operate the structure. "That is something that is going to have to be developed over a period of years to see what your results are, and of course to get the most advantageous regulation of flow."⁴⁹ Finally, Slichter, still uncomfortable with the cost figures and ever sensitive to political as well as engineering controversies, charged his colleagues to develop a

good cost estimate that could be defended before Congress without having to admit a year later that the Corps had made a mistake.⁵⁰

When discussions resumed on 29–30 September 1952, the three consultants were present and immediately examined Toffaleti's work. Einstein discovered some inconsistencies, but admitted that the problems were generic. Calculations of bed-load or of total sediment in transport could be anywhere from 10 percent to 100 percent inaccurate "if you have bad luck."⁵¹ The statement implicitly conceded that intuition and art remained as essential to the design of the control structure as did scientific research. Graves noted that the Corps had decided that the control structure should meet four criteria:

1. Pass the project flood as well as Old River currently did.
2. Pass as much water as Old River currently did during moderately large floods.
3. Should not force the operation of Morganza or Bonnet Carré for floods "that in nature would be borderline for such operation."
4. Should not cause undue rise in stages at New Orleans.⁵²

While these may be the criteria, Straub reminded his colleagues of the actual objectives: prevent the capture of the Mississippi, maintain at least the flood capacity the Atchafalaya then had, and allow navigation through the construction of a lock facility at Old River. Straub, probably to the irritation of others in attendance, returned to an idea discussed and dismissed in earlier meetings, that "friction control" might render a control structure unnecessary. Straub mused that stabilizing most of Old River by placing gravel and boulders and, if necessary, constricting a section of the channel could sufficiently increase the drag on the flow going into Old River and reduce the amount of water entering the Atchafalaya. However, after considerable discussion over the uncertain effectiveness and high construction costs of this approach, Straub was persuaded to drop the idea and return to the more acceptable concept of constructing a concrete, gated weir.⁵³

Williams, from the Mississippi River Commission office, updated the consultants on ongoing Corps studies of bed-load in the Old River area. He addressed a key question: where should the new diversion channel be located to ensure that the appropriate amount of Mississippi River sediment was diverted into the Red and Atchafalaya rivers? Three locations were considered along a six-mile stretch extending north from the mouth of Old River, in the vicinities of Black Hawk, Coochie, and Knox Landing, Louisiana. Numerous tests had been done along the

Mississippi to determine bed-load at various points, leading Corps engineers to conclude that either the upper site at Black Hawk or the lower site at Knox Landing would be better than the one at Coochie. The Corps proposed building a 900-foot-wide outlet channel extending from the gated weir to the Red River. Of that width, 500 feet would be excavated by dredges and the rest would be accomplished by natural scour.⁵⁴

With Williams' presentation, the Corps' concept for Old River became manifest. Old River was to be dammed; assuming economic justification, a navigation lock—details still to be resolved—would be constructed close to the dam; and a new diversion channel would be built at one of two potential sites. Some doubts remained. Slichter feared excess degradation in the channel, while Latimer worried about keeping the channel open at all. Einstein tried to relieve their doubts. He thought that the flexibility of a gated control structure would ensure that the sediment could be controlled. Straub thought that if the low sill structure did take too much sediment, a submerged weir or some other work could be built on the inflow (Mississippi) side of the structure to alleviate the problem, but there was no general agreement on this.⁵⁵

By the time this meeting concluded on 30 September, the Corps experts and the consultants had agreed on several important matters. First, they chose to locate the new channel near Knox Landing, about five miles upstream from Old River. That area impressed them as the most stable geological location and the most promising for proper sediment distribution. They also agreed to request more geological information to ascertain the exact path of the outlet channel and the proper location of the two control structures on the channel. The consultants generally approved the design of the two structures, but recommended model studies to test stilling basin design and to determine the sediment distribution that would result from actual operation.⁵⁶

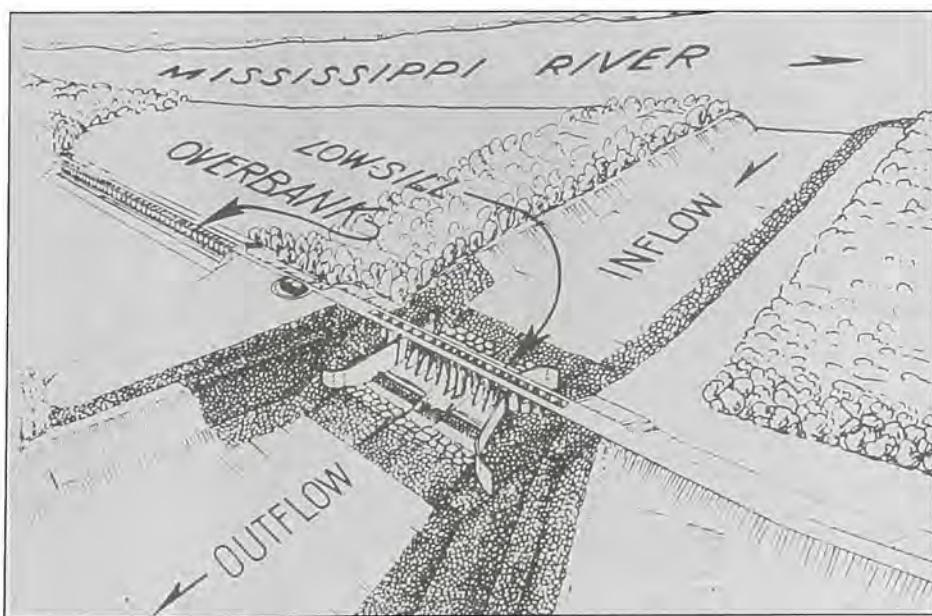
The last objective—determining sediment distribution—was perhaps premature. Basic questions remained. One dealt with the operation of the structures. Slichter referred to Fisk's report and reminded his colleagues that the geologists had concluded that the capture of the Mississippi would happen only after the Atchafalaya's carrying capacity matched the Mississippi's. While this could happen rather abruptly once about half of the Mississippi's volume flowed down the Atchafalaya, Slichter theorized that the Corps could regulate the carrying capacity of the Atchafalaya simply by sending the correct amount of sediment through the control structure; not enough to

prevent the Atchafalaya from carrying the project flood, but enough to thwart the capture of the Mississippi. He conceded that the approach would silt up Grand Lake. Bondurant disagreed with Slichter, arguing that the lower elevation of Old River and the Atchafalaya would result in the Mississippi changing channels at a certain time regardless of the carrying capacity of the Atchafalaya. The only way to prevent this diversion would be to regulate the amount of water going through Old River. In contrast with some of his previous observations, Straub concluded that “the principal thing is to avoid development of capacity by preventing the water from going down there to create a channel. Whether the water contains sediment or not—it’s important to control the water.”⁵⁷ The entire discussion reflected the continuing uncertainty about the ability to control—and depend on—sediment distribution.

The conference illuminated differences over methodology. While most attendees desired three-dimensional model testing, some questioned the usefulness of the tests. Einstein reminded others of the “garbage in, garbage out” quandary, or as he put it, “Actually, a model is nothing but a calculating machine. You don’t get anything out of it unless you put in something to start with. You’ve got to be sure that the model behaves the same way as the river does.”⁵⁸ He stressed that the model testing could not substitute for doing actual measurements on the river: “I believe the thing to do to get the data we need is to go out there in a boat and measure the sediment loads.” However, when Slichter responded that obtaining the information from the river eliminated the necessity for model testing, Einstein quickly retorted that the model would help in checking the results.⁵⁹ Bondurant chimed in that “we’re after data that’s superficially somewhat ridiculous.” The computations were not in agreement, and not enough information was available to put into formulas. “Formulas are like a model in that respect—you can get out of it no more than you put in.” Bondurant’s conclusion was that no amount of model testing would substitute for a complete series of surveys and measurements that provided the necessary data to put into the formulas.⁶⁰

This discussion, too, possessed historical irony. In the 1920s, the Corps had argued that models could never mimic nature and any three-dimensional modeling would have limited usefulness. Professors and private engineers—mainly, John R. Freeman—had argued otherwise, and their lobbying partly accounted for the establishment of the Waterways Experiment Station. Now, however, after the station had established an international reputation, three of the country’s leading hydraulic engineers were raising cautionary signals about the modeling experiments.⁶¹

Regardless, both the testing and the meetings continued. At the end of October, General Feringa escorted Vicksburg and Washington senior engineers on a tour aboard the MRC steamer *Newton*. While traveling from Red River Landing through the Old and Atchafalaya rivers to Grand Lake, the group completely reviewed previous studies and plans. Then on 18–19 May 1953, Corps personnel once more met with Straub, Einstein, and Bondurant. The group reviewed data from the model studies and visited the proposed site of the Old River Control Structure. WES personnel presented the results of a geological investigation of the area. By Knox Landing, they had discovered an abandoned river channel, some 2,400 feet wide, that ran nearly perpendicular to the Mississippi. Building the low sill structure in this location provided major advantages. The silty top stratum, extending some 100 feet beneath the surface, facilitated excavation during construction while reducing the severity of underseepage later. Beneath the silt lay a sand substratum to a depth of 165 feet. These foundation characteristics promised to expedite the construction of the low sill structure, which was to be built on piles driven deep into the ground. Moreover, the uniform foundation benefitted the overbank needle weir structure as well. The conference participants agreed that the location was the best available, that “minor adjustment for foundation conditions could be made without deleterious effects,” and that the sediment



Graphic of the Old River Control Structure operation.

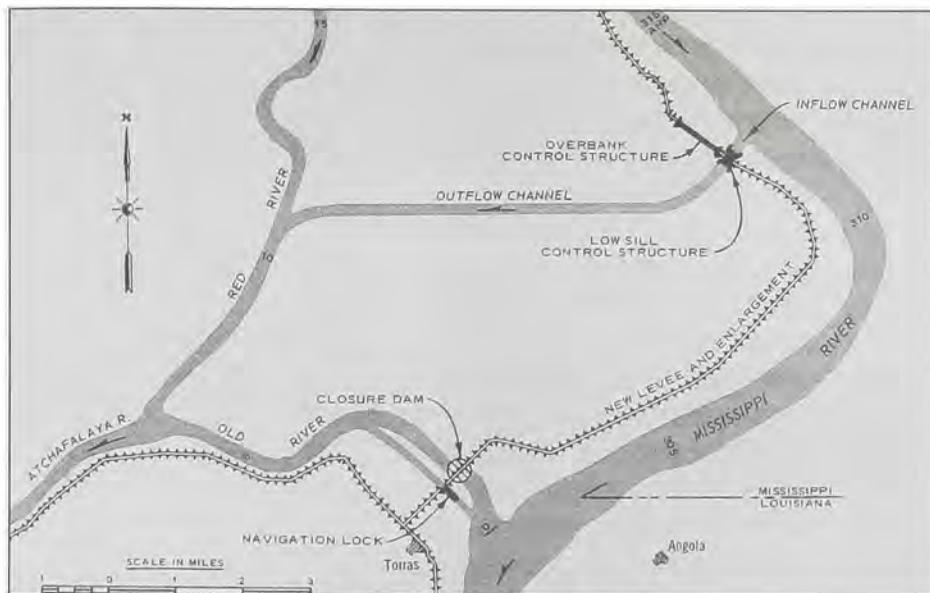
diversion would be satisfactory. At this location, the outflow channel would run about seven miles from the low sill structure to Red River.⁶²

Having helped select a location, agreed on the structures to be built, and identified the objectives to be sought, the consultants were just about finished with their work. The Corps accepted the responsibility of resolving remaining issues. Perhaps the most significant decision left was whether to build the overbank structure downstream or upstream from the low sill structure. In 1949, the Waterways Experiment Station had suggested that the overbank structure should extend southward from the low sill structure. However, in 1953 further model testing at WES caused a reassessment. Engineers determined that the relative locations should be reversed since the original proposal would have created significant sedimentation problems. Consequently, the Corps recommended that the overbank structure be extended northward across a flat area of land instead of southward.⁶³

In late 1953, some model testing remained; indeed, testing would continue during most of the construction period. But postponing construction further threatened havoc. It was time to prepare a formal plan that would lead to congressional authorization.

Preparing the Plan

BRIGADIER GENERAL JOHN R. HARDIN replaced Feringa as president of the Mississippi River Commission on 1 June 1953. As the new president and division engineer, he immediately faced the question of Old River. He conferred with Feringa as well as with Major General Max Tyler, who retained interest in Mississippi River problems although he had retired and left Vicksburg some eight years earlier. Tyler counseled caution and advised the Corps not to hurry into the project and perhaps not do it at all. Hardin, however, came to believe otherwise. He agreed with the consultants and the Mississippi River Commission that something should be done quickly. "To postpone the task is to risk a greatly increased cost and maybe an impossible construction task in the eventual closure," he advised in an informal letter to Major General Samuel D. Sturgis, Jr., the Chief of Engineers. "The resulting impact on the lower basin's economy is too great to gamble with."⁶⁴ Officially, Hardin suggested that Sturgis direct him to prepare a report "in sufficient detail to support authorizing legislation." He agreed with Pick and Sturgis that the existing legislation was insufficient.⁶⁵



Map of the Old River control plan.

In contrast, Latimer protested that no further legislation was required. He also challenged Hardin's contention that floods occurring in the Old River area after construction of the control structure might be considered "additional destructive flood waters" under Section 4 of the 1928 Flood Control Act. He feared that even introducing the idea in a formal report or congressional testimony could delay the construction regardless of the argument's lack of merit. Latimer's rebuttal left Hardin unpersuaded.⁶⁶

Having received Hardin's recommendation, General Sturgis directed him on 7 August 1953 to prepare the formal report. He specifically requested Hardin to address—

1. The cost and extent of flowage easements or of fee simple purchase over the entire Red River backwater area, exclusive of the Tensas-Cocodrie area, that might be subject to overflow.
2. The engineering feasibility and economic justification of partially protecting additional lands within the backwater area, such as the Tensas-Cocodrie area.
3. The advisability of designating some or all of the backwater area as a "National Reservation such as a Wild Life Preserve or National Forest."⁶⁷



John Ray Hardin (1897–1993) was president of the Mississippi River Commission and the Lower Mississippi Valley Division engineer from 1953 to 1957.

The report was Hardin's highest priority. The general assigned specific responsibilities and developed a schedule to meet a February 1954 deadline. He stressed that the report should assume that the control structures would be operated in a manner "which will preserve as nearly as possible the present natural distribution of flow in the affected area."⁶⁸ At the same time, Hardin did not ignore public relations. He desired hearings; more to advertise the Corps' intentions than to solicit information from the public. Later, while the final report was being circulated, but months before Congress actually authorized the project, Hardin published an article promoting the study in *The Military Engineer*.⁶⁹

In memorandums that were reminiscent of Ferguson's on cutoffs, Hardin carefully delineated his ideas about the report to the chief of his engineering division, Norman R. Moore. He agreed with Moore that flood flows must be diverted to Old River before the Corps considered using either the Bonnet Carré or Morganza spillways. He also emphasized that the degradation of the Atchafalaya must be prevented or else the Old River Control Structure would be endangered. The basic point was that the status quo must be preserved. "Is this not the key," he wrote, "to our operational control and the chief justification for doing something now rather than ten years from now when it will be too late to maintain or to restore existing favorable and frequently demonstrated flow capacity?" Of less significance, although still revealing, Hardin agreed with Colonel Charles F. Mitchim, the secretary of the Mississippi River Commission, that the word "diversion" should be avoided in the report.⁷⁰ Evidently, Hardin worried that "diversion" might imply "additional destructive flood waters," consequently forcing the federal government to reimburse landowners at an enormous cost.

Nevertheless, Hardin's sensitivity did not prevent him from using exactly that word in the title of his article in *The Military Engineer*, "The Mississippi-Atchafalaya Diversion Problem."

The Mississippi River Commission solicited advice from numerous agencies, including federal and Louisiana public health, fish and wildlife, and forestry departments; the U.S. Soil Conservation Service; and the Louisiana Department of Public Works.⁷¹ The subsequent correspondence revealed fears that the Corps had not adequately addressed water quality problems. Both the Louisiana Department of Public Health and the Sewerage and Water Board of New Orleans reminded the Corps that a certain volume of water coming down the Mississippi was essential to dilute sewage and other wastes that poured into the river. New Orleans and state officials particularly questioned whether enough fresh water would go past New Orleans to prevent saltwater intrusion. Hardin thought their worry unwarranted. If the state wished to reduce the diversion into Old River to zero whenever the New Orleans water supply was threatened, "it would suit me," he noted.⁷²

While internal documents show that the Corps seriously addressed the issues of navigation, water supply, pollution abatement, and saltwater intrusion, the final report contained little on these subjects. The navigation lock was not considered an essential part of the project, and the MRC advised that decisions on this issue should be postponed for four or five years until various economic studies to determine the cost-effectiveness of the structure were completed. Meanwhile, the Port Allen Lock would be built.⁷³ Roy T. Sessums, the director of the Louisiana Department of Public Works, vehemently objected to the delay and especially to the implied linkage of the Port Allen and Old River navigation locks. He argued that both were necessary, and that any decision about priorities or preferences was a matter for Congress, not for the Corps.⁷⁴ The Corps, nevertheless, refused to commit itself to the Old River lock.

By the beginning of 1954, Mississippi River Commission staff had finished a draft report and submitted it to New Orleans District, Louisiana officials, commission members, and representatives from the office of the Chief of Engineers. Repeating the concerns of earlier generations, a number of correspondents stressed real estate issues rather than engineering. Joseph W. Kimbel, special counsel to the Chief of Engineers, warned Hardin that it would be unwise to ask Congress to exempt the plan from Section 4 of the 1928 Flood Control Act, regarding "additional destructive flood waters." Raising the matter, Kimbel rightly observed, would indeed imply that the plan involved the

diversion of additional floodwater, although the report clearly established that no additional diversions were contemplated.⁷⁵ Colonel Herbert Vogel, the former director of WES, who was then a member of the Mississippi River Commission, perhaps did not know about Hardin's sensitivity over the words "diversion" and "divert" in the report and advised using those words rather than "capture": "Such language is suitable for a newspaper reporter or perhaps a Chamber of Commerce, but I do not believe that engineers should employ such a fanciful form of expression. It would be better if it were stated that the Mississippi will be diverted into the Atchafalaya channel."⁷⁶ In the end, both "capture" and "divert" were used in the report, but, as Kimbel had observed, the report specifically noted, "The plan of improvement does not incorporate a new diversion or floodway nor is the diversion of additional flood waters contemplated over that presently authorized."⁷⁷

By the middle of February, all seven members of the Mississippi River Commission had approved the report, and on 19 March General Sturgis did too.⁷⁸ Although the report had been requested by Sturgis rather than by a congressional committee, Assistant Chief of Engineers for Civil Works, Major General Emerson C. Itschner, thought it best to expedite the study and send it through the Bureau of the Budget to Congress because of the "incessant request" for it by congressional members, committees, and local interests.⁷⁹ Sturgis agreed and sent the report to the Secretary of the Army on 8 April. After reviewing the report and receiving official comments from the Louisiana governor and various federal agencies, acting Assistant Secretary of the Army George H. Roderick submitted the report to the Bureau of the Budget on 21 May. Congress formally received the report during the second week in July.⁸⁰

Authorization

IT WAS UNUSUAL that an agency report which Congress had never formally requested should become a priority before congressional committees. The number of bills introduced to authorize construction of the Old River project reflected the anxiety of lower Mississippi interests. Six bills were offered in the House alone. The measure probably would have been considered earlier had Congress not been tied up with legislation to authorize the construction of the American portion of the St. Lawrence Seaway.⁸¹ While the delay may have upset lower Mississippi congressmen, it enabled them to do some political

horse trading. Louisiana congressmen who had earlier opposed the St. Lawrence project exchanged their votes for support on Old River.⁸² The Louisianans wished especially to win over Michigan Republican George A. Dondero, who chaired the House Committee on Public Works and was an enthusiastic supporter of the St. Lawrence Seaway. On 6 May, Congress finally passed the St. Lawrence Seaway bill after extensive debate. Three weeks later, and six weeks before Congress received the official Corps report, the subcommittee on flood control of Dondero's Public Works Committee began hearings on Old River.

General Hardin was the first witness. He reviewed the entire project, including the authorization issue, and responded enthusiastically to Dondero's question about whether the Corps-designed structures would really be able to keep "Old Man River" in its place: "Yes, sir. We believe we can. I have every confidence we can."⁸³ The cost of the project, excluding the navigation lock, had swelled to nearly \$47 million, but the benefit-cost ratio was a very favorable 7.7 to 1. If a navigation lock 1,200 feet long and 85 to 100 feet wide were included, another \$30 to \$33 million would be needed.⁸⁴ Senator Russell Long, former Representative Larcade, and Louisiana Representatives Passman, Hale Boggs, Overton Brooks, George S. Long, and T. Ashton Thompson urged the subcommittee to approve the project, as did Roy Sessums, the director of the Louisiana Department of Public Works. They were followed by a host of railway, petroleum, and sugar executives, all predicting economic disaster if the Mississippi changed channels.⁸⁵

Congressman Passman explained the financial situation. Of the original \$14 million authorized in 1941, some \$8 million had been spent on levee construction, and Passman recommended reserving the remaining \$6 million for future emergencies in the Red River backwater area. However, the \$15 million authorized in the 1950 Flood Control Act still remained and could be applied to the project. That left \$32 million requiring authorization for the control structure.⁸⁶ To the relief of the Louisiana delegation, such authorization was included in the 1954 Flood Control Act, which was approved on 3 September of that year. The act also authorized the future appropriation of funds for the navigation lock.⁸⁷

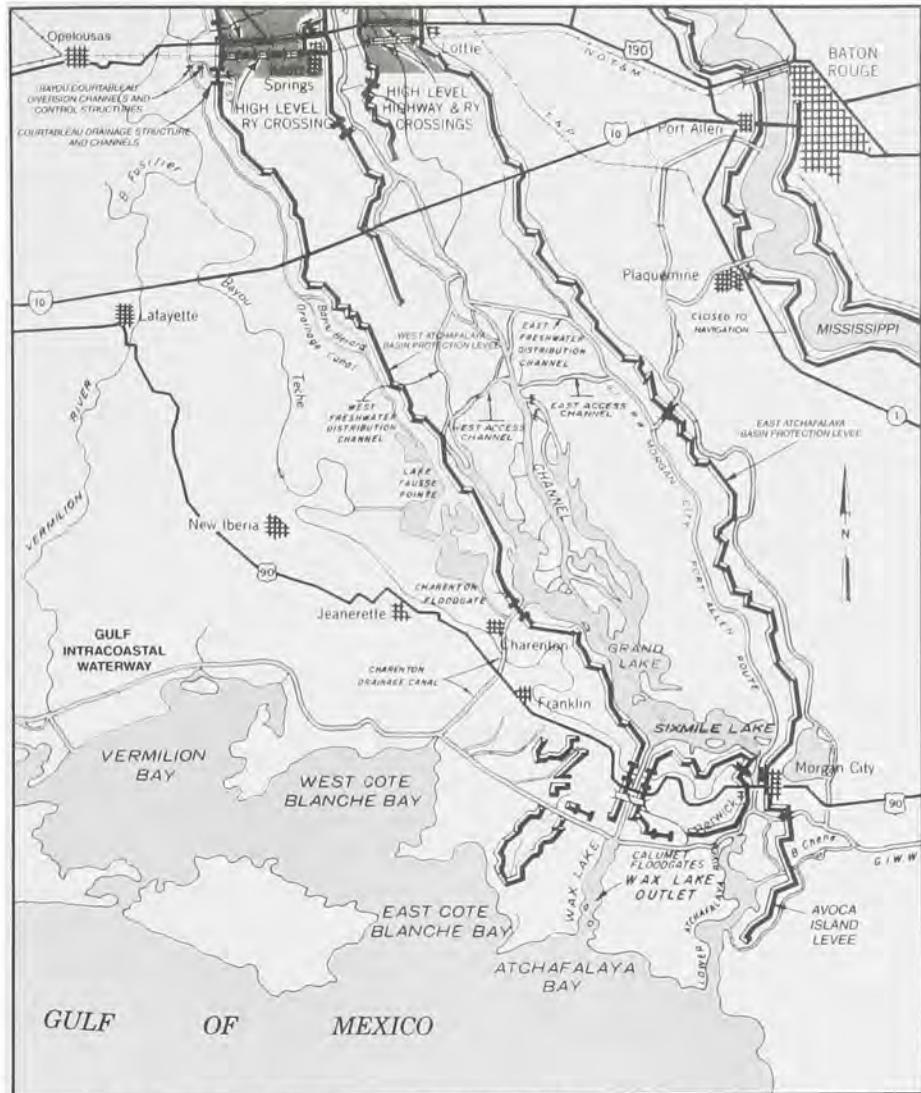
At the same time, Congress also endorsed the expenditure of \$440,000 to improve the navigation channel on the Atchafalaya River above Morgan City, as authorized in the 1946 Rivers and Harbors Act. While involving a relatively small amount of money, this authorization is worth examining, for it sheds light on the Corps' relationship with Congress and local interests in Louisiana.

In September 1949, three years after the navigation channel had been authorized, the Senate Committee on Public Works directed the Corps to prepare a report on the project. The committee resolution asked the Corps specifically to review House Document 288 of the 67th Congress, 1st Session (see page 95). Although this document, dated 17 July 1919, dealt primarily with flood control, the Chief of Engineers had noted that flood control works along the Atchafalaya (mainly levees) would not adversely affect navigation. Since this was the last federal report even mentioning Atchafalaya navigation, the committee used it as a springboard to launch another study.

Colonel Charles G. Holle, the New Orleans District engineer, supervised the new study. The Mississippi River Commission approved it, and the Chief of Engineers concurred. At the end of July 1951, the Secretary of the Army forwarded the report to Congress, where it languished for three years. Colonel Holle and the Mississippi River Commission wrote that local interests wanted a 12- by 125-foot channel dredged through ten miles of shoals in Grand and Six Mile lakes. This would extend the Atchafalaya's navigation season from seven months to year-round. Elsewhere, the river was already sufficiently wide and deep. The Corps estimated the benefit-cost ratio at 1.20 to 1.⁸⁸

The project would benefit barges traveling from Texas and southwest Louisiana ports to the upper Mississippi by cutting 172 miles off their trip. Rather than going through the Harvey Lock at New Orleans, the barges would go up the Mississippi via the Atchafalaya and Old rivers, saving time and mileage, enhancing economic efficiency, and increasing profits for the barge companies. In 1949, nearly 300,000 tons had been sent over this route. About 40 percent constituted petroleum products. According to the district engineer, two towing companies estimated that the channel improvement would result in an immediate increase of 445,000 tons over the 1949 traffic. Holle enthusiastically speculated that the Atchafalaya—Old River route "could become as important as that of the Intracoastal Waterway."⁸⁹ The report also pointed out that once the channel was improved, modern, integrated high-speed tows could use the Atchafalaya all year.

The benefits in the Corps' report were optimistic, but not entirely unreasonable. Certainly, sugar, lumber, and petroleum interests would find the Atchafalaya route attractive. However, the Corps' cost estimate ignored some issues and rested on questionable assumptions. The Corps



The Lower Atchafalaya Basin and the intracoastal waterway. In 1961 the Corps opened Port Allen Lock and permanently closed Plaquemine Lock. The Morgan City–Port Allen route cuts through the east side of the basin. In the early 1990s the annual tonnage locked through Port Allen (25.4 million tons) was 3.6 times that locked through Old River (7 million tons).

did not consider that increased Atchafalaya traffic would reduce the benefits of Harvey Lock or that increased Old River traffic would adversely affect the amount of tonnage at Port Allen. More important, even though the Corps had been drafting plans for a navigation lock at Old River since 1948, the lock was not even mentioned in this report on Atchafalaya navigation. Instead, the document assumed that Old

River would remain an open channel. In fact, it emphasized that barges using the Atchafalaya–Old River route would *not* have to contend with any time-delaying locks.⁹⁰

The report was technically accurate, for neither the Old River Control Structure nor the lock had been authorized in 1951, but its assumptions revealed a lack of candor. The Corps and southern politicians agreed on the urgent necessity of building the Old River Control Structure, and every delta politician knew that the project involved the damming of Old River. A lock connecting the Atchafalaya and Mississippi rivers would be essential if Colonel Holle's optimistic assessment about the Atchafalaya–Old River route proved correct. However, the cost of the lock, some \$30 million, would have jeopardized the economic justification of the entire navigation project, so the Corps had good reason not to raise the matter. Once the Corps received the funding for the channel improvement, it quickly went to work, and in two and a half months between 2 December 1955 and 15 February 1956, it opened the Atchafalaya–Old River system to year-round navigation from Angola, Louisiana, on the Mississippi River to Morgan City.⁹¹

The manner in which the Old River Control Structure and the Atchafalaya navigation improvements were authorized reflect what one author has styled the politics of "reciprocal intrusion," wherein engineers and politicians use each other to further their own aims.⁹² In the case of the Old River Control Structure, engineering concerns and plans drove politics, and Congress responded. The reverse was true of Atchafalaya River navigation improvements. Local interests and their congressional representatives desired the improvements, and the Corps made a case for them despite the knowledge that benefits would probably never be realized once Old River was dammed—unless the Corps built the lock at Old River.

Construction

WHILE CONGRESS DELIBERATED the Old River Control Structure, engineering work on the project continued. At the site itself, the Corps conducted pile tests and obtained the data necessary to complete foundation plans and specifications.⁹³ General Hardin also formed a new board of consulting engineers to advise on the project. Professors Einstein and Straub remained on the board. Joining them were Harold Fisk, Julian Hinds, and Calvin Davis. Davis was president of the Harza Engineering Company of Chicago, and Hinds had served as general



A guide at the Waterways Experiment Station explains the model of the Old River area and the plans to prevent the Atchafalaya from capturing the Mississippi. The model was built in 1936 with a vertical scale of 1:100 and a horizontal scale of 1:2,000. Photograph c. 1960.

manager and chief engineer of the Metropolitan Water District of Southern California from 1941 to 1951. He also co-authored the widely used *Engineering for Dams*, and he and Davis wrote the *Handbook of Hydraulics*. The board, minus Straub, who had a prior commitment, held its first meeting on 27 April 1954 in the office of the Mississippi River Commission in Vicksburg. As with the earlier board, senior-level civilians from New Orleans, the Office of the Chief of Engineers, the Waterways Experiment Station, and the MRC also attended. Corps officials briefed the board on the plans for the Old River Control Structure, going over much of the material that had been discussed in earlier meetings. The group also went to the Waterways Experiment Station, where they saw a model of the Mississippi River in the vicinity of the control structure and observed a preliminary test run on the recently completed model of the low sill control structure. Following the meeting, General Hardin's staff sent a list of questions to the board members to elicit any inadequacies in the basic data and model tests and to assure that all board members agreed on the general design and practicability of the project.⁹⁴

Hinds was generally impressed with the plans and offered little in response to the questions. He thought the tests adequate, the design practical, and foresaw no outstanding difficulties. He even backed off



Low sill construction, 1958.

from a proposal he had made in April to round off the upper side of the entrance channel to reduce the accumulation of silt in the channel. Upon further reflection, he decided that the proposal might result in less silt going through the control structure, which would work to the project's disadvantage.⁹⁵ Apparently, Straub was the only board member with reservations. At a special meeting held for him on 14 June, he asked why two types of structures (low sill and overbank) were being planned rather than just a low sill structure long enough to pass the project flow. MRC engineers responded that the two structures could pass about an equal amount of water at flood stage, but that the overbank structure would cost only half as much as the low sill structure. Moreover, the flow requirements at bankfull stage and slightly higher required a low sill structure of the proposed length.⁹⁶ What possessed Straub to raise this issue at this time is unclear. Certainly, after years of work and consultation, the Corps would not likely change its design unless the board found major problems with it.

In fact, the board found no such problems, and planning proceeded accordingly. Actual construction of the low sill structure began on 14 September 1955. By mid-1957, the structure was over half finished. Meanwhile, on 28 October 1956, the Corps began the construction of the overbank control structure. By mid-1958, the low sill structure was about 90 percent finished, and the overbank structure was 75 percent done. In 1959, both were completed. The 1958 Flood Control Act



New navigation lock and channel at Old River, 1963.
The large dam to the left permanently blocks the lower Old River.

authorized another \$28.2 million for the project, principally for the navigation lock, and on 27 June 1958, the Corps awarded a contract for excavating the lock structure and constructing levee fill. The lock was completed and opened for traffic on 15 March 1963. Three months later, on 27 June, the Corps began to dam Old River. Two hydraulic cutterhead dredges worked around the clock pumping sand into the river. By 12 July, Old River stopped flowing as the sand broke through the water's surface. Dredges continued to put more sand and silty soil on the dam and added clay to make an impervious blanket. By 15 October 1963, when the dam was complete, it ranged in height from 20 feet near the river bank to 99 feet at the deepest part of the stream.⁹⁷ Old River was dead, and the Mississippi, the Corps confidently asserted, would stay in its channel.

The entire project was impressive. The low sill control structure was 566 feet long and had 11 gate bays, each with a 44-foot clearance between the piers. The overbank structure was 3,356 feet long and had 73 bays, also with a 44-foot clearance between the piers. The navigation lock was 75 feet wide and 1,200 feet long. The Corps designed the project to maintain the approximate flow distribution that existed in 1950: at the latitude of Old River, 30 percent of the combined flow of the Mississippi and Red rivers—including *all* the water from the Red River and 25 percent of the Mississippi's flow—went into the Atchafalaya. The remaining Mississippi River water continued downstream past Baton Rouge and New Orleans. During a project flood, about

600,000 cfs would enter the Atchafalaya from the Mississippi and another 300,000 cfs from the Red River. Of the total 900,000 cfs, 250,000 cfs would be directed through the West Atchafalaya Floodway. Farther south, another 600,000 cfs would enter the Atchafalaya Basin through the Morganza Floodway, bringing the total to 1.5 million cfs flowing into the Atchafalaya Bay and the Gulf of Mexico.⁹⁸ The Old River Control Structure was the key to the entire lower Mississippi valley flood control plan, and the Corps of Engineers had complete confidence in it—at least for a while.

Post-Construction Problems

THE OLD RIVER CONTROL STRUCTURE was hardly finished before it began having problems. In 1964, the low sill gates were closed because eight barges had broken loose from their upstream moorings and were drawn into the structure. The reopening of the gates following the removal of the barges produced "hydraulic overstress" on the low sill structure and "extensive scour damages" in the outflow channel leading to Red River, according to a Corps report.⁹⁹ A similar accident occurred the following year, again producing extensive scouring in the



Barge collision at the low sill structure, 1965.

outflow channel. The structure's vulnerability was revealed in 1973, when a major flood on the lower Mississippi required using both the Old River Control Structure and, eventually, the Morganza Floodway.

Corps engineering documents, heavy with discussions of high flow velocities, turbulence, and hydraulic overstress, utterly fail to convey the drama of 1973's near catastrophe. In mid-March, the water raging through the low sill structure vibrated the entire structure—all 200,000 tons of it—so that if a person drove a car onto the structure and opened the car door, it would close unassisted. A wall of water six stories high, one-fourth of the 2 million cfs of floodwater roaring down the Mississippi's channel as it passed Old River, slammed through the gates. The water's energy scoured a 50-foot-deep hole on the inflow (Mississippi River) side of the low sill structure and threatened to enlarge a hole approximating the size of a football stadium which had developed during the previous decade on the outflow side.¹⁰⁰ Had the two holes joined, Louisiana State University geologist Raphael Kazmann maintained, the low sill structure more than likely would have collapsed and, despite all the Corps' labors, the Mississippi would finally have been "captured" by the Atchafalaya.¹⁰¹

As the flood increased in intensity into April, more trouble came. The south guide wall, one of two curving structures on the inflow side



Low sill structure before the wingwall failure.

that directed water into the low sill structure, began to move. For some reason, possibly to save money, it had not been built on piles like the rest of the low sill structure and was less stable. Undermined by the inflow scour hole, the guide wall slipped into the river; the Corps faced a monumental crisis.¹⁰²



The low sill structure during the 1973 flood and after the collapse of one wingwall on the inflow side (just above the center of the photograph).

Fortunately, the low sill structure held. None of the Corps' emergency repairs—mainly dumping tons of riprap into the scour holes—would likely have offset the water's force had the flood continued. Later, the Corps filled the scour holes with a special grout mixture. Subsequent investigations revealed, in the words of a Corps public affairs document, that "the structure had been seriously and permanently damaged."¹⁰³ Soon after the flood passed, the Corps drilled a hole into the middle of the low sill structure and lowered a television camera through the center of the structure all the way to the foundations below. A frightening scene was revealed. All the material from around the piles had been washed away. The camera saw fish, and, as Major General Charles C. Noble, the Lower Mississippi Valley Division engineer later laconically observed, "You don't have fish in solid material. Fish are in water."¹⁰⁴

The low sill structure was designed to operate with a maximum head of 37 feet (the difference between the inflow and outflow

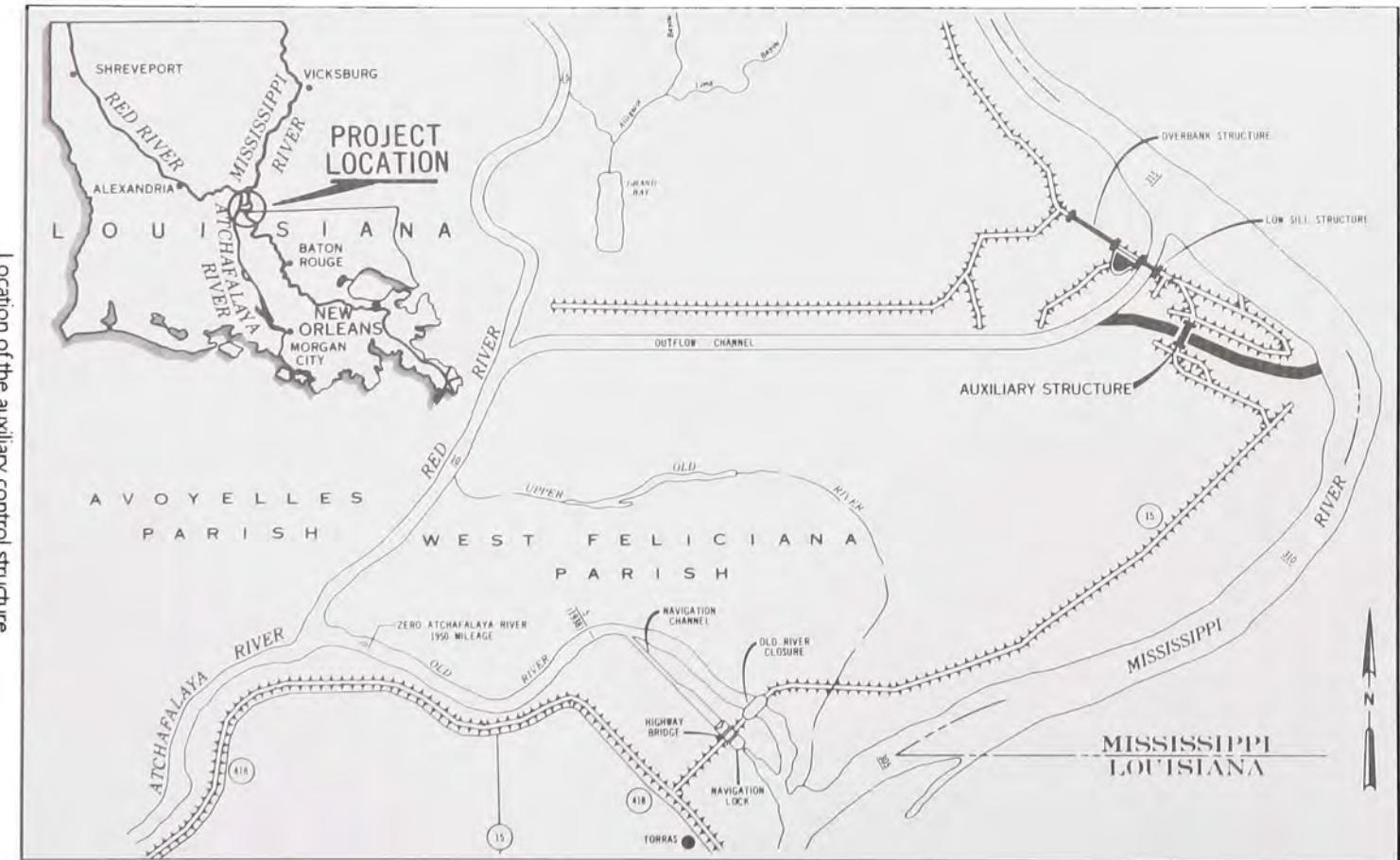
channels). However, with the structure's weakened condition, the Corps lowered the maximum head to 18 feet and raised it to 22 feet only after modifying the structure to help prevent future disasters. Engineers changed the gates on the low sill structure to allow better flow conditions, and they provided additional scour protection in both the inflow and outflow channels.¹⁰⁵

Still, a 22-foot maximum head at the low sill structure would be insufficient in an emergency. The Corps therefore decided to build an auxiliary structure. Anticipating the need, the Waterways Experiment Station conducted a stability analysis of the structures at Old River and initiated model investigations almost as soon as the floodwater began subsiding. The Old River model covered 1.5 acres; other models were built to test different kinds of auxiliary structures.¹⁰⁶

The Chief of Engineers authorized the auxiliary structure in 1979. No additional congressional authorization was required since Congress and the Corps considered the new structure part of the original project.¹⁰⁷ Finally, in 1981, just below the low sill structure, the Corps broke ground for a new structure with a separate inflow channel from the Mississippi and an outflow channel joining the channel leading from the low sill structure. Extensive computer modeling and the experience gained from constructing and operating the original low sill structure helped shorten the planning period. Completed in 1986, the auxiliary structure cost more than three times as much as the original project.¹⁰⁸

The auxiliary structure's working part consists of six tainter gates—moveable arched gates fixed to trunnion blocks and lifted by cables—each 62 feet wide. They are the strongest tainter gates ever built by the Corps and offer more flexibility, speed, and precision than do the gates in the low sill structure. Also, pilings support the entire structure, except for the upstream concrete apron. The Corps used a larger stilling basin than in the original project and provided complete scour protection for the upstream and downstream channels.¹⁰⁹ "In grandeur and in profile," observed the writer John McPhee, the auxiliary structure "would not shame a pharaoh."¹¹⁰

Indeed, like ancient pyramids the Old River structures confront rather than complement the landscape. A traveler driving north on State Highway 15 crosses over the Old River navigation channel, over the earthen dam from which can be seen the remains of lower Old River on both sides, and then past upper Old River off to the left—now no more than a finger of water. A few miles farther on loom the auxiliary channel, the low sill structure, and finally, the overbank structure. Whether a testimony to human hubris or human aspirations,



the structures project durability and reliability; they are public works in a style that unmistakably marks the land.



Old River Control. The auxiliary structure is in the foreground.
The low sill and overbank structures are in the upper right (1987).

Yet, the structures also signify engineering arrogance to some people. The 1973 flood seemed to validate the skepticism, and the Corps unquestionably has become more modest about its ability to control the Mississippi River. Reflecting this modesty, and implicitly criticizing past efforts to reduce engineering art to scientific formulas, General Noble advised, "You can't sit down with a bunch of mathematics and formulas and predict in advance how a hydraulic structure is going to act and how water will act in different conditions of flow." The only thing you can do, he maintained, was to gather the best data you could over the years and base the design on it. "You make corrections, thereafter, from experience. It is very similar to the practice of medicine."¹¹¹ And soon after the Corps had completed the auxiliary control structure, Fred Bayley, the chief of engineering in the Lower Mississippi Valley Division, said, "Anything can fail. In most of our projects, we try to train natural effects instead of taking them head on. I never approach anything we do with the idea that it can't fail. That is sticking your head in the sand."¹¹²

Chapter 8

Let the Public Be Heard: Reconciling Multiple Objectives

JUST AS THE CORPS COMPLETED the Old River Control Structure project in 1963, it advanced plans for further engineering of the Atchafalaya Basin. These plans responded to problems that had already become apparent in the mid-1950s. The levees continuously subsided because of swampy land underneath them, while Mississippi River silt regularly settled in the heavily braided middle and lower reaches of the Atchafalaya River. The silt raised ground elevations in the floodways, and this in turn necessitated higher levees—which once more would subside. The cycle was endless and potentially disastrous. The floodway system could not carry the floodwater anticipated in the project flood.

To remedy the situation, the Corps called for a substantially larger channel to alleviate the sedimentation problem and increase the river's flow capacity. At the same time, the Corps proposed closing more distributary channels and extending the levee on the east bank of the river farther downstream. By confining the water in a relatively closed system, the Corps would hasten the development of natural banks and, in the end, reduce the required heights of the levees. The agency also planned an energetic bank stabilization program to prevent the levees from sinking. While all these measures would result in a far more efficient flood control project, the work threatened a full-scale assault on the basin's ecosystem.

The Corps' plan elicited strong objections from local residents, who maintained that the proposals would destroy fishing and hunting grounds and impair the economy of the region. The resulting controversy illustrated differing notions of responsibility. Whereas the Corps pointed to numerous laws charging it to develop and maintain a flood control system, segments of the public, as well as various institutions and organizations, insisted that the agency exercise its responsibility in accordance with ideas of public good that transcended specific laws and challenged agency priorities. In consequence, implicitly and sometimes explicitly, the caretakers and would-be caretakers of the Atchafalaya Basin raised questions that reached their polemical climax in the next

decade, once the environmental movement had spread throughout the country. Who should determine planning objectives? What degree of scientific certainty should be expected? What baseline year should be used to evaluate habitat deterioration, and, indeed, how much do we really know about an area before human habitation? What groups and individuals should be involved in the planning process, and when should they be included? Finally, and perhaps most important, what institutional arrangement guarantees both a good technical evaluation and a politically acceptable solution? Nowhere else in the country were these questions more vigorously debated than in Louisiana, where the future of the Atchafalaya Basin sparked continuous controversy.

The Setting

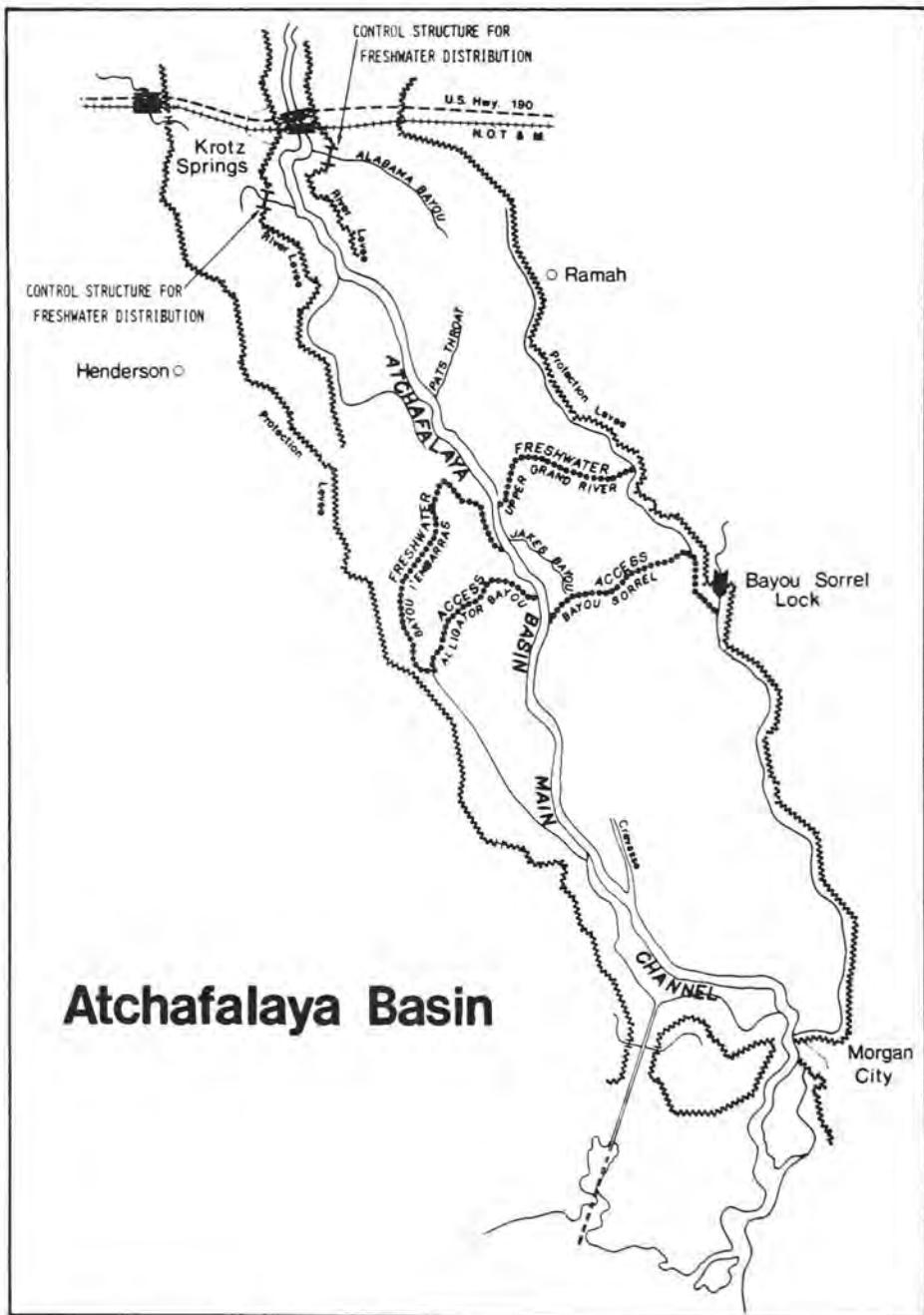
ON THE EVENING OF 12 AUGUST 1963, an overflow crowd came to the Lafayette Parish War Memorial Building in Lafayette, Louisiana, to hear Colonel Edward B. Jennings, the New Orleans District engineer, explain the proposed work of the Corps of Engineers in the lower floodway. Over 300 people, including several state senators and representatives, filled the auditorium to capacity. Far more were turned away, and extra speakers were installed outside the building to accommodate the crowd. In an hour-long presentation, Colonel Jennings explained the importance of the Atchafalaya Floodway and how the combination of weakened levees and increasing sedimentation threatened the floodway's effectiveness. The sediment needed to be carried out to the Gulf. As Jennings explained, if you allow a 30-gallon bathtub to fill with 15 gallons of sediment, the tub will only hold 15 gallons of water. The Atchafalaya "bathtub" was filling up.¹

Many of the people who attended the Lafayette meeting were sportsmen concerned that the Corps' attempts to develop an adequate flood control project would come at the cost of eliminating or losing access to favorite fishing and hunting spots. Since 1954, the Corps had been closing many of the distributary channels within the basin and deepening the main channel to confine the flow and to force as much sediment as possible into Atchafalaya Bay. If the Corps closed literally all east-west distributary channels, certain parts of the swampland would inevitably dry out and access to other parts would become difficult, if not impossible. Jennings' protest that the Corps could not possibly drain the Atchafalaya Basin may have comforted some, but the Corps already had closed upper Grand River and Logan Chute on the west side and had plans to close Chicot Pass to the east. The actions

threatened both recreational activities and the commercial fishing industry. The Corps' intention to dredge 60 miles of the Atchafalaya River's main channel to enlarge the cross-sectional area first to 60,000 and then to 100,000 square feet was a good flood control measure, but it conjured up pictures of hydraulic dredges spewing effluent into the swampland behind the levees, where it would raise ground elevations, making it difficult for the annual high water to rejuvenate the swampland and threatening lakes, streams, and fish and wildlife far from the designated "spoil" areas. Earlier dredging had already devastated some areas. People returned to their favorite fishing holes to find either no lake or dead fish—covered with effluent.² Sometimes they found that dredging activity blocked access routes, making it impossible even to reach fishing and hunting spots.

Jennings' presentation did much to assuage the audience. The Corps' plan retained cross-basin navigation channels at Bayou Sorrel on the east side and Bayou Chene–Alligator Bayou on the west, while maintaining fresh water diversion through Upper Grand River–Little Tensas Bayou in the east and Lake Long–Bayou L'Embarras in the west. Additionally, the Corps planned to construct fresh water diversion structures in the vicinity of Sherburne and Bayou Courtaleau to mitigate fish and wildlife losses. The structures would allow fresh water to enter parts of the basin that no longer received normal overflows because of dredging and levee construction. Freshwater canals would reduce environmental losses by distributing water from the enlarged main channel of the Atchafalaya River to the lower basin; they could also serve as navigation channels. The Corps even included two recreation areas and additional roads on top of the levees to provide better access in the lower basin.³

Federal and state wildlife agencies had expressed concern about the basin for a number of years. In 1956, Louisiana fish and game officials had inquired whether the Corps might be interested in purchasing the swampland in fee simple to ensure that private encroachments would not impair hunting and fishing. A 1959 report of the Fish and Wildlife Service (FWS) likewise urged the Corps to purchase the land rather than to depend on easements, but the FWS stopped short of making a formal proposal. It did recommend, however, that the project become multipurpose, with fish and wildlife conservation joining flood control as authorized functions. Three years later, Charles "Charley" W. Bosch, executive secretary of the Louisiana Wildlife Federation, echoing proposals of previous decades, urged that the basin be made into a national park or wilderness area under the National Park Service.



Atchafalaya Basin

Fresh water distribution and navigation access channels in the Atchafalaya Basin were completed by the mid-1970s.

Only two weeks before the Lafayette meeting, L. D. Young, director of the Louisiana Wild Life and Fisheries Commission, had recommended to Secretary of the Interior Stewart L. Udall that the Atchafalaya Basin be made into a national recreation area managed by federal and state fish and wildlife agencies.⁴ Clearly, the conservation community, both public and private, intended to minimize the "damage" the Corps did to the basin. In the words of the alliterative battle cry of the following decade, the basin was to be kept "wet and wild."

In light of these efforts, Jennings' presentation predictably did not sway all at the Lafayette meeting. Victor Lambou and Max Summers, biologists with the Louisiana Wild Life and Fisheries Commission, grumbled to Young that at the beginning of the meeting the Corps was "extremely unpopular" with most of the audience, but by the end of the meeting, "We would have been considered the villains for even suggesting that the Corps project was not going to benefit wildlife and fisheries resources." They were frustrated because no one had directed any questions to them, and they believed that some of Jennings' comments were inaccurate and contradicted various Fish and Wildlife Service reports.⁵

Young was upset when he received Lambou and Summers' report. In a New Orleans news conference, he urged that another public meeting be held where the fish and wildlife people could present their side. However, the Greater Lafayette Chamber of Commerce, sponsor of the War Memorial meeting, was wary. Members did not wish to be in the middle of a dispute between the Corps and the state and federal fish and wildlife agencies. Instead, the chamber decided to form a Greater Atchafalaya Basin Council in which groups from around the basin could discuss common concerns, reach consensus about potential solutions, and then with one voice work with the necessary local, state, and federal agencies to realize the solutions. B[enjamin]. E. M. Skerrett III, a local insurance agent (and recreational fisherman), who had chaired the Atchafalaya subcommittee of the Chamber of Commerce, became the council president.⁶

Not everyone at the Lafayette meeting cared about swampland preservation. Petroleum company representatives worried only about the Corps closing access channels which would impair water routes to the sea.⁷ The seven land companies and four landowners who owned a little over half of the lower floodway, not to mention the citizens of Morgan City and Berwick which lay in the path of any Atchafalaya River flood, may have valued the unique qualities of the area, but they were infinitely more concerned about adequate flood control.⁸

Reconciling these conflicting positions posed tremendous challenges to the Corps of Engineers.

Coordination or Confrontation?

ESTABLISHED IN 1940 and reorganized in 1956, the Fish and Wildlife Service strove in the 1960s and '70s to define a responsible leadership position working with state and private conservation groups. Concurrently, it sought cooperation and respect from larger, more powerful federal agencies, such as the Corps of Engineers. Within the Atchafalaya Basin, the relationship between the Corps and the FWS was more often acrimonious than cordial into the 1980s. The relationship between the two agencies helped shape a critical part of the basin's recent history.

According to political scientists Jeanne Nienaber Clarke and Daniel McCool, from 1956 to 1970 the FWS was "a kind of phantom agency" at the assistant secretary level within the Department of the Interior. The Service's narrow mission and lack of strong constituent support resulted in minimal political clout. At the operating level, the agency consisted of two separate bureaus: Commercial Fisheries and Sports Fisheries and Wildlife (except as noted, all field FWS personnel mentioned in this history belonged to the latter bureau). The Bureau of Commercial Fisheries was returned to the Department of Commerce in 1970 and consolidated with the newly formed National Oceanographic and Atmospheric Administration. The Bureau of Sports Fisheries and Wildlife remained as the Fish and Wildlife Service. The organizational gymnastics of the agency left an enduring mark. The FWS did not grow as rapidly as other natural resource agencies, even though it manages more land—most of it in Alaska—than the far better known National Park Service.⁹

The FWS was not without legislative authority, however. The 1958 Fish and Wildlife Coordination Act compelled federal water resource agencies to coordinate with the Fish and Wildlife Service before submitting reports to Congress. The clear intent of the act was to conserve fish and wildlife resources as much as possible, commensurate with project objectives. New "Principles and Standards" (Senate Document 97) approved by President John F. Kennedy in May 1962, required multipurpose planning that would consider, among other resource uses, "sport and commercial fish and wildlife protection and enhancement" and "preservation of unique areas of natural beauty,

historical and scientific interest." Water resource planning would be more complicated in the future.¹⁰

Although the FWS had often expressed its belief that fish and wildlife conservation should be made an official purpose of the Atchafalaya Basin project, as of early 1963 it had not made any formal recommendations to the Corps that would have required any project modifications. Partly, this was because the Corps, in a congressionally directed review of the entire Mississippi River and Tributaries Project that had occurred in the late 1950s, had indicated that various proposals of local interests for fish and wildlife conservation were incompatible with flood control. Beyond that, FWS studies dealing with water stages and regimen were incomplete, precluding any definitive FWS conclusions about possible mitigation measures.¹¹

State officials always hoped that the Atchafalaya Basin could be an effective flood control system without in any way denigrating the commercial and recreational use of the basin. In 1961, the state legislature petitioned the Corps, "without in any wise impairing the flood control program," to allow the introduction of fresh water from the Atchafalaya River into the swamplands east of the river and to ensure navigation access between the floodway and river, "both of which are vital to the fishing and oil industries." The following year, bowing to fish and wildlife interests, the legislature expressed its "deep concern about the Corps of Engineers Atchafalaya project" and requested the FWS to study what damage would be done by the Corps project. The legislature even insisted that the engineers "accept and implement the findings of the Louisiana Wild Life and Fisheries Commission and the U. S. Department of the Interior, Fish and Wildlife Service as to how to alleviate damages in the area."¹²

These state resolutions, as well as other expressions of concern, were transmitted to the Louisiana congressional delegation, and on 16 March 1962, Louisiana Senator Russell Long persuaded the Senate Public Works Committee to authorize the Corps of Engineers to study the question of access between the East and West Atchafalaya Basin Protection Levees and the main channel of the Atchafalaya River. According to Long's press release, the aim of the study was to "provide some restitution" to the people whose livelihood had been impaired by the flood control project, although the form of restitution was not clearly defined.¹³

The various state and congressional resolutions complicated life for New Orleans District personnel, but they dutifully responded to requests for information from the fish and wildlife agencies, which clearly considered the resolutions as mandates to ensure that plans for

the Atchafalaya Basin adequately address mitigation issues.¹⁴ After considering four options regarding closures submitted by the Corps, the FWS decided that the least harmful one involved closing two small bayous, La Rompe and La Rose, although even in this case it identified harmful ecological consequences resulting from reduced backwater. As the comments proceeded through the bureaucratic hierarchy of the FWS, they were considerably strengthened, perhaps partly in deference to the powerful National Wildlife Federation, which for the first time registered its concern over protecting the basin.¹⁵ Moreover, the FWS had just decided that the Atchafalaya Floodway should be designated a "Fish and Wildlife Area of National Significance." Reasons enough existed, then, for the office of the director of the FWS to insist that the report be strengthened to justify protecting the resources. Thus, while in January 1963, an early draft of FWS comments had indicated opposition only to the extension of the West Atchafalaya Levee, the final version, published about eight months later, opposed levee extensions on either side of the river because of the "severe long-term effect on fish and wildlife habitat of the middle and upper reaches of the floodway."¹⁶

By the time the Fish and Wildlife Service had completed its final report, New Orleans District had finished a general design memorandum (GDM) for the Atchafalaya Basin explaining the engineering and other modifications the district wished to make in the Atchafalaya Basin. The proposals served as the basis for Colonel Jennings' remarks at the Lafayette meeting. The memorandum had used FWS draft comments, but Corps officials had not yet seen the final FWS report. The Corps' GDM differed from Fish and Wildlife Service's recommendations in at least two important ways. First, rather than constructing closures at Bayous La Rompe and La Rose, the Corps called for closing the old channel of the Atchafalaya River near the head of the new main channel (Whiskey Bay Channel Extension). Second, the Corps wanted to extend the levee along the east side of the Atchafalaya River.¹⁷

The general design memorandum was routinely sent to the Corps' Lower Mississippi Valley Division office at Vicksburg for approval. Meanwhile, Fish and Wildlife Service officials requested a meeting to discuss the differing approaches. Subsequently, the agencies held two meetings, but they could not reconcile their differences, so they agreed to postpone the initiation of fish and wildlife plans and to continue the discussion at the Washington level. At the end of November, the Vicksburg office forwarded the GDM to the Office of the Chief of Engineers for final approval pending resolution of the fish and wildlife issues. Less than two months later, the Chief of Engineers approved a

slightly modified GDM, subject to the need for revised and substantially higher cost estimates based on the results of various tests being done to determine the exact channel size and levee grade.¹⁸

Federal and state fish and wildlife personnel were distraught that the GDM had reached the chief's office without incorporating fish and wildlife plans. They believed that the Corps took their concerns less than seriously. After noting the failed Corps–FWS meetings, the regional director of the Fish and Wildlife Service concluded that "the District and Division Offices have deliberately forwarded their recommendations without finalizing coordination of fish and wildlife needs." He drafted a letter to be sent from the Secretary of the Interior to the Secretary of the Army complaining of Corps' actions and specifically noting that such procedures contradicted the wishes of the Louisiana legislature.¹⁹ Subsequently, Frank P. Briggs, the Assistant Secretary of the Interior contacted the Department of the Army. Meanwhile, Young also complained that Corps procedures reflected "a lack of consideration to both the resources need and the Senate Concurrent Resolution of the [Louisiana] Legislature on this matter."²⁰ At the end of January, after the chief's office had approved the GDM, Young wrote Senator Long (with copies to other members of Louisiana's congressional delegation), "It is apparent now, as pointed out in previous correspondence, that the Corps of Engineers is proceeding with plans that will be detrimental to this resource."²¹ Young's observation, shared by other federal and state fish and wildlife officials, may have been accurate so far as it went, but it disregarded the Corps' position that delaying work on the flood control project until all details concerning mitigation had been negotiated would be legally and professionally irresponsible. These differences in perception and concern persisted for years afterward.

In early February, Joseph Califano, Jr., the Army General Counsel, informed Briggs that the Corps had agreed to hold fish and wildlife aspects in abeyance.²² About the same time, Jennings explained to Long that, although the Corps fully considered fish and wildlife concerns, "Unfortunately, it was not possible to devise a plan having the full approval of the fish and wildlife agencies."²³ He further observed that it was not practicable to delay action on the entire GDM since "such action would adversely affect the very urgent work of raising the floodway guide levees to grade and dredging the main channel to its ultimate dimensions." Nevertheless, it would be possible to delay completion of the "more controversial features relating to fish and wildlife pending further coordination with the wildlife agencies." Major General Jackson Graham, the director of civil works, delivered

the same message to Louisiana's congressional representatives a week later.²⁴ This sizable offensive by the Corps had the desired results. The entire Louisiana congressional delegation wrote Young, "under no conditions should we attempt to slow down the report that the Engineers have sent to Washington on the Atchafalaya Basin." The delegates saw no reason why fish and wildlife concerns should delay work on necessary flood protection.²⁵ The Fish and Wildlife Service had failed to convince Louisiana legislators, and one unhappy field supervisor concluded that "a good portion of the fish and wildlife resources will be lost regardless of what fish and wildlife measures are included."²⁶

The general design memorandum posed one potentially embarrassing problem for the Corps. In its comprehensive review of the Mississippi River and Tributaries Project which had been done in the late 1950s and early 1960s pursuant to House and Senate committee resolutions, the Corps had estimated that the floodway project would cost some \$180 million. The GDM raised the federal costs to \$284 million, although the benefit-cost ratio was a very respectable 7.8 to 1. Unfortunately for the Corps, the comprehensive report traveled through the bureaucracy at such a glacial pace that the Bureau of the Budget was still reviewing it when the New Orleans District completed the new GDM. Major General Ellsworth I. Davis, the Lower Mississippi Valley Division engineer, wished to keep the higher estimate out of the bureau's hands, although he thought that certain members of the Louisiana delegation, especially Senator Ellender and Representative Passman, should be informed. It is not clear what motivated Davis, since the higher estimate reflected major modifications, and it is doubtful that his advice was followed. In any case, by May 1964, when the Bureau of the Budget finally submitted the comprehensive report to Congress, it was apparent that the project's cost would increase considerably. The only question was by how much. Only in spring 1965, when congressional hearings took place on the comprehensive review, were the cost figures officially updated to reflect the new GDM.²⁷

While the Corps fretted about costs and the Fish and Wildlife Service about ecological damage, construction continued on the floodway project, and the two agencies exchanged information and views on water diversion structures, spoil areas, and other items. In cases not significantly affecting the project, the Corps acceded to the FWS desires. For instance, the Corps agreed to use dragline methods wherever possible, rather than hydraulic dredging, to minimize damages to fish and wildlife, even though employing draglines

increased expenses. Furthermore, no spoil would be permitted within 100 feet of the top of any existing channel or other waterway.²⁸

Colonel Thomas J. Bowen, the New Orleans District engineer, insisted that the Corps was "acutely aware of its responsibility" in the fish and wildlife area, but also admitted that a number of small lakes, including some excellent fishing spots, would have to be sacrificed to enlarge the main channel cross section even to 60,000 square feet, let alone the 100,000 square feet then being contemplated; either channel encroachment or dredge spoil would effectively eliminate these lakes.²⁹ Private groups, chiefly the Greater Atchafalaya Basin Council headed by Skerrett, desired three additional "navigable gaps" along the left bank to allow fishing and recreational activity. Colonel Bowen initially agreed to only one gap, maintaining that the other two gaps would interfere with flood control.³⁰

The chances that the Corps would significantly modify its plans would increase if local interests and state and federal fish and wildlife agencies could agree on a suitable alternative. If a member of the Louisiana congressional delegation helped, ensuring some political support, so much the better. Exactly this situation developed in 1966, when Skerrett and the Greater Atchafalaya Basin Council enlisted the services of Senator Ellender. Through one of his assistants, Ellender had already conveyed his concern to Skerrett in December 1965, for preserving the Atchafalaya hunting and fishing area.³¹ Perhaps he would never have gone beyond this statement had not a chance sequence of events in early 1966, and his re-election campaign, focused his attention on the problem.

Early in 1966, Vernon Behrhorst, a geography professor at the University of Southwestern Louisiana in Lafayette, met Assistant Secretary of the Interior for Fish and Wildlife Louis Cain principally to discuss problems dealing with the Intracoastal Waterway. During the discussion, Behrhorst expressed dismay that the Corps seemed unresponsive to the environmental consequences of the flood control project in the Atchafalaya Basin. Cain suggested that the problem be taken to someone higher in the Corps' chain of command and requested Behrhorst to write him a letter detailing the problem. Upon his return to Lafayette, Behrhorst contacted Skerrett, who was excited about the prospect of dealing with Washington directly, but frustrated at the thought of trying to put everything down on paper. Skerrett invited two other recreational fishermen, Al Beacham, a physician, and Benny J. Gautreaux, an accountant, to his house, and they decided to call rather than write Cain to suggest meeting face-to-face. Cain agreed.³²

Beacham and Skerrett flew to Washington at the end of February, and on the way they saw someone on the plane "who looked kind of familiar." It turned out to be Senator Ellender, and the plane ride to Washington allowed the two men to acquaint Ellender further with their problems in the Atchafalaya. Even the weather cooperated; it was so poor that the plane landed in Philadelphia rather than in Washington, and the passengers were bussed back to the capitol, allowing more time for conversation. Skerrett invited the senator to the meeting with Secretary Cain the next morning. Ellender declined but asked Skerrett and Beacham to brief him after the meeting.³³

Both Corps and FWS representatives met in Secretary Cain's office on 1 March. They exchanged views and agreed about the need for coordination. Afterwards, Beacham and Skerrett saw Ellender and showed him pictures of the dredging and the destruction it was causing. Ellender immediately called a staff member of the Senate Public Works Committee and directed him to ask the Chief of Engineers for a full report on the dredging situation. Meanwhile, Colonel Ralph Kristoferson of the Corps, who had attended the meeting in Cain's office, made a similar request of Colonel Bowen in New Orleans. Ellender kept up the pressure in the following weeks. He wrote Bowen to request that "every effort, consistent with the primary interests of this Project," be made "to protect the fish and wildlife aspects of this Basin." In subcommittee hearings in the middle of March, he asked General Davis to hold siltation in the basin to the minimum extent possible. Within two weeks, Davis wrote Ellender and explained that New Orleans would use retaining dikes for spoil material and Skerrett would have an opportunity to review the Corps' spoil disposal plans.³⁴

The Fish and Wildlife Service also instructed its people to cooperate with Skerrett's group. Shortly after the Washington meeting, Assistant FWS Director James T. McBroom directed Spencer Smith, the Atlanta regional director of the Bureau of Sport Fisheries and Wildlife to coordinate FWS efforts with the Greater Atchafalaya Basin Council, the Louisiana Wild Life and Fisheries Commission, and the Corps. McBroom also directed that a field investigation be made.³⁵ Smith called Skerrett, who offered to arrange a guided tour of the basin for FWS personnel. Smith enthusiastically agreed, and Skerrett organized a tour at the beginning of April.³⁶

The tour was an eye-opener. Smith and other FWS officials observed dredge boats pumping out lumps of clay that varied in size from "that of a large potato to a large pineapple." They could see the effluent run down the riverbanks, into the nearest ravine, and continue to flow until it hit a body of water and eventually stopped. Still, the

team accepted dredging as a fact of life that everyone would somehow have to accommodate. The most that could be done was to continue to advise the Corps on which spoil areas would do minimal damage to fish and wildlife and to identify additional access channels.³⁷ Attempts to enhance fish and wildlife resources rather than simply to mitigate losses resulting from project construction inevitably met Corps resistance. The Army engineers insisted that such attempts were not within their authority and that even measures to minimize losses required monetary justification. The Fish and Wildlife Service generally provided the necessary analysis, problematical as it was, although its official position was that the legislative history of the Fish and Wildlife Coordination Act showed that monetary justification was not required.³⁸

In June 1966, the Fish and Wildlife Service submitted a report on main channel dredging to the Corps. The FWS recommended that all spoil be put behind retaining dikes and that—following Skerrett's lead—three additional channels be maintained, both for navigation access and freshwater distribution.³⁹ The report, only four pages of text and several pages of pictures and maps, seemed largely based on the experiences of the FWS team that had inspected the basin in April. Despite the attention given to various tests and analyses, the report's conclusions could probably have been written years earlier; they did



Dredge excavates on the east bank of the Atchafalaya River (1965).
The ring levee in the center of the photograph protects a cemetery.

nothing more than reflect the collective views of local interests and the conservation community. What was changing, however, was the political environment. The FWS made certain that a copy of its dredging report reached Senator Ellender. Consequently, at a Baton Rouge press conference held in July during his re-election campaign, Ellender expressed his support for the efforts of the Greater Atchafalaya Basin Council and urged the Corps to do everything possible to abide by the suggestions made in the FWS report.⁴⁰

Ellender's influence is difficult to evaluate, but when the Corps first publicly responded to the Fish and Wildlife Service recommendations at a public meeting in Morgan City in September 1966, former skeptics were impressed. One newspaper reporter concluded that the Corps had "turned over a new leaf and now stands ready to work hand-in-hand for the preservation of what's left of the Atchafalaya Basin."⁴¹ While agreeing to maintain one additional channel, the engineers adopted a wait-and-see attitude on the other two; but they did not completely rule them out, as Bowen earlier had (both gaps were later closed). The New Orleans District also agreed to construct retaining dikes at many locations, but believed it was impossible to confine the spoil completely because gaps were necessary in some dikes for oil pipeline crossings and canals or for a properly working flood control project.⁴² Aside from these changes, obviously important to the overflow crowd who attended the Morgan City meeting, the district concluded that no substantial modifications should be made in the GDM in response to the March 1962 Senate resolution. All contemplated or ongoing improvements were judged to be within the existing authority of the Chief of Engineers and additional congressional legislation was not required.⁴³

By fall 1967, substantial progress had been made on the floodway project. Both the east and west navigation access channels were completed, and work began soon on the east and west freshwater distribution channels. All but 20 miles of the 124-mile West Atchafalaya Levee and all but 28 miles of the 90-mile long East Atchafalaya Levee had been brought up to adequate grade and cross section. Colonel Bowen thought that the flood-carrying capacity of the Atchafalaya River would reach 1.2 million cfs within a year and eventually would reach the 1.5 million cfs contemplated in the original project plans. Bowen noted that natural hydrologic activity, especially during floods, had created a cross section somewhere between 90,000 and 100,000 square feet from the head of the Atchafalaya to Mile 55. Dredging had enlarged the channel to 60,000 square feet from Mile 55

to Mile 96 (Grand Lake). The channel size declined to 40,000 square feet below that point to Berwick City.⁴⁴

However, Colonel Bowen was too optimistic. In fall 1968, the Corps ceased dredging in the main channel because of a lack of funds. Then, a little over a year later, when President Richard M. Nixon signed the National Environmental Policy Act (NEPA) into law on 1 January 1970, he gave environmentalists an important new method of stopping projects, the environmental impact statement (EIS). By this time the future of the Atchafalaya Basin had become a controversial and highly publicized statewide issue, and no one group could be sure its view would prevail.

Engineering matters were not the only disagreement between the Corps and fish and wildlife interests. Nearly as controversial an issue was the amount of water to send down the Atchafalaya River. Generally, fish and wildlife officials opposed any reduction in flow. In the late 1960s, local farmers joined the debate. During the high water of 1968, farmers in the Red River backwater area suffered severe property damage that prevented them from planting their crops that year. They claimed the damage could have been avoided if the Corps of Engineers had temporarily reduced the amount of Mississippi River water flowing into the Atchafalaya. They wanted the Corps to reduce this flow annually from the middle of April to the end of the harvesting season. However, not only did fish and wildlife interests oppose any reduction of flow into the Atchafalaya River, but they urged an increase of flow during low water. Both the Louisiana Wild Life and Fisheries Commission and the State Parks and Recreation Commission energetically supported the FWS position. The Wild Life and Fisheries Commission noted especially that reduced fresh water in the basin would allow saltwater intrusion and a potentially massive disruption of the fishing industry. Meanwhile, navigation interests wished the distribution of flows to remain the same, while several public and private organizations along the Mississippi River, including the New Orleans Sewerage and Water Board, opposed any plan to reduce flows in the Mississippi, fearing both saltwater intrusion and increasing concentrations of pollutants.⁴⁵

The issue was complicated and divisive. The farmers took their case to Washington, and in June 1968, the Senate Public Works Committee passed a resolution directing the Corps to resolve the various conflicts. To do so, the Lower Mississippi Valley Division began an extensive series of model testing at the Waterways Experiment Station. Also, in late 1968, the New Orleans District held a series of public meetings in Vidalia, Lafayette, and New Orleans. Toward the end of February

1970, the Corps invited representatives from Louisiana police juries, state agencies, and conservation organizations to come to Clinton to see a demonstration of results of the model studies. The demonstration convinced nearly all the police juries and conservation groups that it would be better to continue to operate the Old River Control Structure as the Corps had done.⁴⁶ However, the issue did not disappear but instead became enmeshed in the larger controversy concerning the Atchafalaya Basin's future.

Recreation

RECREATION BECAME an increasingly controversial issue, although more for state politicians than for either federal or local officials. Meanwhile, the Corps kept the Greater Atchafalaya Basin Council informed about its recreation plans. Toward the end of 1966, the district completed a preliminary master plan (Design Memorandum 33A) for public access and recreation for the basin. It included modest plans for access roads, parking areas, and boat launching ramps.⁴⁷ Local interests were to provide rights-of-way and operation and maintenance costs, and the federal government was to pay no more than half of the construction costs. The division approved a modified version of the plan the following July, and the Chief of Engineers gave final approval in September. A Corps representative briefed the council about these plans the following April.⁴⁸

However, the Corps' proposal was minor compared to the dreams of some of the more visionary politicians around the state. The 1968 Louisiana legislature, in House Concurrent Resolution No. 67, had "authorized and requested" the register of state lands to "take any and all steps which are necessary to execute the leasing and/or purchasing of the lands which lie within the Atchafalaya Spillway Basin" for use as either a state or national park. Act No. 612 of that same legislature authorized either state or federal purchase of land for wildlife management and recreational purposes. The act requested the Army Corps of Engineers to provide not less than 50,000 acres of land for wildlife management areas to be managed by the Louisiana Wildlife and Fisheries Commission. Federal largess was always fair game, even, as in this last request, when the quarry seemed especially elusive.⁴⁹

Finally, the 1968 legislature also established a Louisiana Goals Committee, which among its primary challenges was developing plans for the economic growth of the state. One aspect of that growth involved tourism, and the committee organized a Task Force on Parks,



Recreational boating in the Atchafalaya Basin.

Recreation and Tourism, which developed a sweeping program to double the state's \$500 million tourism industry by 1975. A key part of this program was to make the Atchafalaya Basin a national recreation area. This was not a new idea, but went back at least to Young's proposal to Secretary Udall in 1963. However, the idea did not receive widespread support and publicity until the end of the 1960s, when Governor John McKeithen led efforts to spur Louisiana's economic development. In the words of the task force's preliminary report, the basin "should become a multiple purpose recreational area which exceeds in attractiveness the Everglades National Park in Florida." Establishing a national recreation area was "Louisiana's last chance to save an unspoiled area for future generations. [The basin's] natural beauty would provide the state with an unparalleled tourist attraction."⁵⁰ The sentiment reflected the ambivalence and contradictions characteristic of many public statements about the Atchafalaya Basin. How was one to have tourist and sports activities and also keep the basin "unspoiled"? And how would the creation of a national recreation area affect the commercial fishing industry? The preliminary report lacked specific details, but evidently the framers envisioned the state administering the national recreation area with the aid of private capital.⁵¹

Ben Skerrett was becoming frustrated with the Corps' slow pace in constructing fish and wildlife features, and he began to think along the same lines as the task force. In Washington, where he had been transferred, Spencer Smith prompted Skerrett. He suggested enlisting additional help to counter the Corps influence and to accelerate the recreation and conservation development of the basin. Smith believed that Leslie Glasgow, Assistant Secretary for Fish and Wildlife and Parks and a former Louisiana State University professor, might help.⁵²

When Skerrett returned to Lafayette, he discussed Smith's ideas with Atchafalaya council members, and they agreed to contact Glasgow. Skerrett made the arrangements, and Glasgow sent a team of National Park Service officials to the basin to explore possibilities. However, whatever report the team submitted to Glasgow was never published nor sent to Skerrett.⁵³ State and local officials appeared to be confused about the federal position. Glasgow had sent National Park Service people to the Atchafalaya and the Fish and Wildlife Service had also made studies, but neither agency had made firm recommendations about the area. As the director of the Department of the Interior's Bureau of Outdoor Recreation (BOR) explained to Senator Ellender in June 1971, such recommendations could be made only after an in-depth study involving money and manpower. No agency of the Department of the Interior, including the BOR, had made such a study.⁵⁴

Developing a plan that promised both recreation and preservation, both enhanced sports opportunities and the protection of commercial fishing, was difficult enough. Beyond those considerations, however, were others even more resistant to solution. The idea that the basin could remain a wilderness as oil companies continued to crisscross it and extract its minerals bewildered many. Moreover, a multitude of federal regulations had to be met before the basin could qualify as a national recreation area. Some of these regulations appeared insurmountable. For instance, a prohibition against permanent camps within federal recreation areas appeared to rule out fishing and hunting clubs, some of which had been in the basin for a long time. Skerrett later recalled that one regulation even prohibited hunting with dogs.⁵⁵ Plans for a national recreation area were being overwhelmed by bureaucratic rules and competing interests.

Growing State Involvement

BOTH THE STATE LEGISLATURE and Governor McKeithen were growing restless. The 1970 legislature passed Senate Concurrent Resolution No. 53, which endorsed the creation of an Atchafalaya national recreation area. At the end of the year, Governor McKeithen issued Executive Order No. 79, designating his director of the State Planning Office, Ronald Katz, to serve as state coordinator of efforts to have the basin declared a national recreation area.⁵⁶ Both McKeithen and Katz sought the assistance of the Louisiana congressional delegation and the Department of the Interior.⁵⁷ They received the active support of the Louisiana Wildlife Federation and the Louisiana Outdoor Writers Association.⁵⁸

In May 1971, Governor McKeithen called a few people together to discuss in more detail how to "save" the basin. The key person was Charley Bosch of the Louisiana Wildlife Federation. Other people included Ben Skerrett, Leslie Glasgow (once again a professor at Louisiana State University), and Mike Cook, the outdoor editor for the *Baton Rouge State-Times*.⁵⁹ The discussion further stimulated the governor's interest and support. At the same time, however, he endured growing criticism from basin landowners and oil and timber interests, who objected to any proposal favoring a national recreation area.⁶⁰ Therefore, at the end of May, in a time-honored political maneuver, McKeithen established the Governor's Commission on the Atchafalaya Basin to tackle the issue. The commission consisted of 26 people, including Bosch, Skerrett, and Glasgow.⁶¹ McKeithen appointed Wade O. Martin, Jr., his supporter and long-time Louisiana secretary of state (an elected position), to head the commission. While the commission worked, the governor could comfortably retreat to the sidelines.

Already on 17 May, the Land and Royalty Owners of Louisiana Association (LAROLA), a nonprofit organization of Atchafalaya Basin landowners, had passed a resolution opposing "federal encroachment into the Atchafalaya Basin in the form of federally administered recreation areas."⁶² And on 31 May, five days after the governor's commission had been established, both basin landowners and state sportsmen appeared before a Louisiana House Committee to protest the lack of consultation with them and to seek a resolution objecting to the creation of any sort of "federal recreation district" in the Atchafalaya Basin. An uneasy truce resulted when one legislator successfully argued that the commission should be allowed to write its report before any decisions were reached.⁶³ In the following weeks, commission members investigated problems associated with the establishment of a

national recreation area, while landowners focused on potential loss of mineral rights should the federal government take over the basin.⁶⁴

Meanwhile, discussions continued in Washington. G. Douglas Hofe, Jr., the director of the Bureau of Outdoor Recreation, indicated to Senator Ellender that oil, gas, and timber production, as well as commercial fishing, crawfishing, and hunting may be permitted in a national recreation area if such activities were subordinated to outdoor recreation. Furthermore, should Congress resolve that such activities continue without constraints, the Department of the Interior would be compelled to oblige.⁶⁵ Still, the debate—and the fears—continued. Nathaniel Reed, the Assistant Secretary of the Interior, disavowed a newspaper article that suggested that his department would have to purchase between 30 and 40 percent of the basin before a national recreation area could be established (much of the land could be covered by a recreational servitude as Hofe had pointed out to Ellender). Like everyone else, Skerrett was also confused and wrote to Secretary of the Interior Rogers C. B. Morton asking for clarifications about national recreation areas, especially whether one could be created with adequate protection for timber and mineral rights. Morton replied that it was, indeed, possible if Congress so deemed.⁶⁶

Throughout the summer of 1971, nothing the Governor's Commission on the Atchafalaya Basin did could mollify the landowners, even though several of them were on the commission. Finally, at the end of October, commission members reached a compromise. The conservationists agreed to the formation of a committee to study a proposal to create an entirely state-administered recreation area and to drop further consideration of a federal recreation area. In response, the landowners acquiesced to a motion requesting an in-depth study of the basin by the Bureau of Outdoor Recreation, although, if the state administered the area, the study's use would probably be limited. Meanwhile, landowners lured promoters of the national recreation area with a very attractive proposal. Twelve basin landowners had promised to turn over to the state 150,000 acres of land for recreation use, and a landowner spokesman envisioned a state-managed recreation area of about 286,000 acres. The final compromise called for the state to lease most of the land, some 200,000 acres for game management, at an amount of compensation to be determined. About 21,000 acres would be offered for sale for boat ramps, trailer parks, wildlife lands, and an interpretive center. A "scenic easement" would be put over 1,500 acres.⁶⁷ The only person who seemed especially upset by this agreement was Leslie Glasgow, who had championed having the basin declared a

national *wildlife* recreation area, something which still required congressional clarification and authorization.⁶⁸

The compromise was outlined to the commission by Ben Skerrett, whom the landowners had privately courted. They knew that Skerrett had his own pet project, a water management study of the basin first suggested to him by Victor Lambou, formerly with the Louisiana Wild Life and Fisheries Commission and now with the newly formed federal Environmental Protection Agency (EPA). Skerrett agreed with Lambou that the EPA should conduct a thorough study that would aim to preserve or even improve the basin's water quality. The issue was critical, for water level and quality defined the basin's unique natural characteristics. The floodways magnified variations in water levels and accelerated the change to a terrestrial environment. The resulting depletion of fish, wildlife, and even timber threatened both recreation and commercial interests. Something had to be done to reduce sedimentation in the backwater areas. The landowners offered to support the water management study if Skerrett would drop his sponsorship of the national recreation area. Skerrett agreed. Subsequently, in a commission meeting amendments were passed which enlarged the proposed study to include land as well as water management and which provided that the Corps of Engineers work with the EPA on the effort.⁶⁹

To propose a study is one thing. To implement it, quite another. No study by federal agencies was possible without congressional support and agency cooperation. On 13 March 1972, Governor McKeithen, Ben Skerrett, and Wade Martin jointly signed letters requesting a "Comprehensive Water Management Study of the Atchafalaya Basin" that would include siltation problems, water quality, and reclamation of sport and commercial fishing areas, to be jointly conducted by the Corps of Engineers and the EPA. Letters were sent to



B. E. M. Skerrett III photographed in the early 1970s.

the Chief of Engineers, the EPA administrator, and the entire Louisiana congressional delegation.⁷⁰ Two days later, Louisiana's senators and representatives announced that they were seeking authorization for such a study from the appropriate House and Senate committees.⁷¹ On March 23, the Senate Public Works Committee passed a resolution requesting the Chief of Engineers, "in cooperation with other interested Federal and State agencies, such as the Environmental Protection Agency, and the Louisiana Stream Control Commission" to develop a comprehensive plan "for the management and preservation of the water and related land resources of the Atchafalaya River Basin."⁷² The House Committee on Public Works passed a similar resolution on 14 June 1972. The resolutions expressly gave the lead role to the Corps but stipulated that the Corps consult and cooperate with all "interested" state and federal agencies, not just with the EPA. Eventually, the U.S. National Marine Fisheries Service joined the effort, as did the Louisiana Department of Public Works, the Wildlife and Fisheries Commission, and the Stream Control Commission. Other participants included the Greater Atchafalaya Basin Council, Louisiana State University, and the National Wildlife Federation.

Even though the Corps was to head the "Atchafalaya Basin Water and Land Resources Study" alone, rather than jointly with the EPA as Skerrett and others had hoped, Skerrett was delighted, especially since the study was to address problems dealing with the preservation of the basin and not try to resolve troublesome recreation issues.⁷³ Other members of the Governor's Commission on the Atchafalaya Basin may have been almost as pleased, although both testimony before the commission and the observations of commission members revealed that landowners still continued to fear encroachments on their property rights, while most conservationists still wanted a national recreation area.⁷⁴ Nevertheless, when the commission submitted its final report on 24 April 1972, the compromise was still intact. The report focused on development along the lines suggested by the landowners. At the same time, the commission advocated a BOR study and a joint Corps-EPA water management study; this last proposal, of course, had been overtaken by events. The report also advocated that the commission be retained as an advisory group and that a single state agency have the responsibility for developing the Atchafalaya Basin.⁷⁵

This last recommendation created some controversy and left some bitter feelings. In May 1972, soon after Edwin Edwards had replaced McKeithen as governor, the Atchafalaya Basin commission went temporarily out of business. However, it left behind a bill, hammered out in lengthy negotiations, designed to ensure that what it had started

would not be stopped. One remaining critical question was which state agency should be charged with the ongoing mission? Wade Martin discussed the issue with Governor-elect Edwards, who opposed putting the function in the secretary of state's office. Martin, in Edward's estimation, already had too much power. According to Sandra Thompson, Martin's assistant and future executive director of the Governor's Commission on the Atchafalaya Basin, Edwards decided instead to put the function in the Department of Public Works; a new Atchafalaya Basin Division would be created.⁷⁶

Edwards' decision disappointed both conservationists and sportsmen, who hoped that the mission would be given either to the Wild Life and Fisheries Commission or to an entirely new agency. The Department of Public Works was known as a "junior Corps of Engineers," whose traditionally narrow conception of its mission prevented elevating fish and wildlife considerations to the same level as flood control and economic development. Still, as Wade Martin and other supporters of the enabling legislation argued, the Department of Public Works enjoyed more success in getting federal funds than any other state agency. This observation did not placate opponents, who suspected the worst.⁷⁷

At the beginning of July, the state legislature unanimously passed the enabling legislation. The law not only established the new Atchafalaya Basin Division but, partly at the insistence of some legislators, resurrected the Governor's Commission on the Atchafalaya Basin. Both organizations were put into the Department of Public Works. Besides the governor, who was to be a member *ex officio*, the act provided for 24 commission members. The governor was to appoint three from a list of nine to be submitted by conservation organizations, three from a list of nine to be submitted by landowner organizations, eight from a panel of names to be submitted by the parishes occupying portions of the Atchafalaya Basin, two commercial fishermen, and two selected from six names to be submitted (one each) by various organizations including the AFL-CIO, the Greater Atchafalaya Basin Council, the NAACP, and the State Chamber of Commerce. Five state senators and representatives were also members by virtue of their positions chairing relevant legislative committees. Obviously, the conservationists were heavily outnumbered in such a group. Another problem for the environmental community was that the act provided very little financial support. It authorized the issuance of \$5.7 million in general obligation bonds to support the activities of the Atchafalaya Basin Division, but the act indicated that the total cost of the program as outlined in the April report would be over \$64 million, including land purchase, leasing, and

water management structures. Obviously, the federal government was expected to make up the difference. In fact, the act's drafters assigned to the federal government the \$50 million expenditure estimated for water management structures.⁷⁸

Despite a number of major obstacles still to be overcome, the future of the Atchafalaya Basin looked promising in the middle of 1972. The Governor's Commission on the Atchafalaya Basin had submitted a report that reconciled—or sidestepped—the very different views of the landowners and conservationists. It could serve as a document for further action on the state level, even if the responsibility had passed to the Department of Public Works, an agency that raised red flags for the environmentalists. At the national level, the Corps of Engineers was to cooperate with federal and state agencies on a land and water quality study of the basin in order to reduce siltation, improve water quality, and suggest improvements to benefit commercial and sport fishing. The state had a definite political objective, to create a state-administered recreation area, whereas the Corps was faced with accumulating massive amounts of scientific and engineering data before any program could be fashioned. Professional, bureaucratic, and political problems lay ahead. Nevertheless, federal and state agencies appeared determined to cooperate to provide the best comprehensive plan for the Atchafalaya Basin.

Acting as a neutral consensus builder would be difficult for any agency such as the Corps, which had values and objectives deeply embedded in its own long history and which prided itself on its engineering management and expertise. Engineers in the Corps increasingly saw their project designs substantially modified to accommodate diverse public and private organizations. The Corps' new role in the Atchafalaya Basin was especially difficult. The project had been authorized for over 30 years, and no one denied its importance to flood control. The Corps was not only professionally inclined, but legally charged to ensure the implementation of the flood control plan. Nevertheless, the events of the 1960s demonstrated that any solution to Atchafalaya Basin issues would require consensus building. Success depended on joint federal-state efforts and significant involvement by both landowners and environmentalists. Relations between the Corps and the FWS suggested profound differences in approach not easily resolved through congressional mandates. Of course, it was not just the Corps that had to change. Other state and federal agencies needed to establish procedures—and values—that ensured that all parties were heard on a subject. This was a lesson easy to learn and extraordinarily difficult to implement.

Chapter 9

Environmental Activists and the Corps of Engineers

WHEN PRESIDENT NIXON SIGNED the National Environmental Policy Act (NEPA) on the first day of the new year, 1970, he changed dramatically the way in which federal agencies plan public works projects. The act declared that it was the "continuing policy of the Federal Government...to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans." Section 102(c) required that an environmental impact statement (EIS) be included "on proposals for legislation and other major Federal actions significantly affecting the quality of the environment."¹

The drafters of the EIS requirement had hoped to ensure careful scientific analysis of potential environmental ramifications. They had intended to establish procedures, not specific goals, and to force federal construction agencies such as the Corps of Engineers to be far more sensitive to the environment. If a federal agency did not prepare an EIS before construction or prepared an inadequate one, the law allowed legal redress; however, NEPA's legislative framers had not anticipated the deluge of litigation resulting from this provision. In the coming years, the courts determined project requirements as much as science did.² The EIS became by far the biggest weapon ever given to the environmental community.

Within a year after NEPA became law, environmental organizations either had filed or were threatening to file lawsuits against numerous Corps of Engineers projects. These included Kindred Dam (Sheyenne River), North Dakota; La Farge Dam (Kickapoo River), Wisconsin; Logan Dam (Clear Creek), Ohio; Salem Church Dam (Rappahannock River), Virginia; Pescadero Creek (San Mateo County), California; Forked Deer (Obion Rivers Project), Tennessee; Lower Granite Dam (Snake River), Washington, Oregon, and Idaho; Gillham Dam (Cossatot River), Arkansas; and the Tennessee-Tombigbee Waterway, Alabama and Mississippi.³ The Corps felt besieged, and sometimes lashed out at

its critics. The Tulsa District engineer inappropriately asked the Chamber of Commerce of DeQueen, Arkansas, to organize a group to support the Gillham Dam project. Even worse, the Jacksonville District engineer unwisely called President Nixon's 1971 decision to halt work on the Cross-Florida Barge Canal a "bum decision,"⁴ an observation that hardly enhanced the colonel's promotion opportunities.

It was a new era and one very foreign to engineers long accustomed to being cultural heroes, not villains. The era forced engineers throughout the country, including those in the Corps, to reassess their traditional orientation. Engineers who had spent their entire careers designing projects in defiance of nature now were told to tailor their design to nature's requirements, a shift that left many engineers uncomfortable, if not irate, particularly if they thought that the change would make the project less efficient or unsafe.

Engineers also found new, and not always entirely welcome, participants at the conference table: environmental scientists who had different values and rationalized policy in nontraditional ways. From now on, efficiency addressed the ecology as well as the economy; and equity embraced both human and nonhuman populations. To some engineers, this ecological ethic was culturally subversive, for it subordinated human contrivance and ingenuity to environmental holism; ecocentrism replaced anthropocentrism. In this light, environmentalism more than just challenged engineer professionals; it was a full-scale assault on long-held social values. Moreover, determining ecological impacts required costly and time-consuming scientific investigations. Engineers (and politicians) increasingly wondered whether the results were worth the effort. More data and improved measurements did not necessarily lead to better answers.

Arguably, scientific methodologies imposed rational planning on an otherwise inchoate process. Indeed, a logical, although politically reckless, conclusion would be that they rendered citizen participation unnecessary. Instead, a variety of agency regulations ensured an expanded public review process for federally constructed projects. Citizens with concerns once thought peripheral to the construction of water projects were encouraged to question engineering judgment. More than ever, planning and engineering mirrored social reality as much as professional expertise. In the Atchafalaya Basin, the environmental era reframed old issues and posed new ones—and it greatly expanded the number of players in the unfolding drama.

The National Wildlife Federation–Corps of Engineer Agreement

OLIVER "OLIE" HOUCK was a federal prosecutor in Washington, D.C., when, in August 1971, he joined the counsel's office of the National Wildlife Federation because "the little criminals were getting caught, but the bigger ones were getting away with stealing the Rocky Mountains and some pretty important other natural systems."⁵ With its generally conservative and Republican membership, the National Wildlife Federation was not the most obvious place for a budding environmental lawyer. Formed in 1936 to link various state sportsmen's organizations, and in its formative years generally allied with the gun industry, it expanded its membership after World War II to include "associate" members who generally put a higher value on outright preservation than did the hunters and fishermen. The federation united the two groups, partly through skillful compromise on the part of its leadership and partly by carefully choosing issues. By the 1970s the organization had enrolled more than 2 million members, developed an impressive educational conservation program, and cultivated good connections with the political establishment; but its record on behalf of environmental protection (aside from hunting issues) was not especially aggressive.⁶ It generally did not litigate; that was usually left to more outspoken environmental organizations such as the Environmental Defense Fund, which had been established in 1967 to seek judicial remedies to the widespread use of DDT.⁷ However, after President Nixon signed NEPA into law, the possibilities of using the EIS requirement to stop public works projects tantalized the federation leadership.

In 1970–71, the energy level intensified in the legal office of the National Wildlife Federation. The heady atmosphere resulted partly from naivete and partly from receiving nearly daily reports of new or partial victories in the courts of the land. Houck was ready to do his



Oliver Houck

part, but he could hardly have expected that his role would be determined on his first day on the job. That day he received a telephone call from someone "speaking in Cajun tones that I could barely understand." It was Charley Bosch, who wanted someone from the National Wildlife Federation to come to Louisiana to see what could be done to save the Atchafalaya Basin. Houck rather blithely indicated his willingness, even though he had little idea about what the basin was and even less about what he was getting himself into.⁸

Bosch died in 1979 without revealing the reasons for seeking assistance from the national office of the Wildlife Federation nine years earlier. But the answer is not difficult to guess. Governor McKeithen seemed to be backtracking from his support for a national recreation area, landowners were raising objections to any federal encroachment, and the Governor's Commission on the Atchafalaya Basin seemed to be in disarray. Meanwhile, the Atchafalaya River was enlarging naturally, even though the Corps had not dredged the river since 1968. Options were being foreclosed, while the state appeared unable to respond. Seeing other projects stopped because of inadequate or missing EISs, Bosch probably reasoned that with the national office's help he could do the same thing in Louisiana.

In New Orleans, Houck visited the district office of the Corps to gather material about the basin, and he realized that with its long involvement in the Atchafalaya, the Corps would have difficulty changing its procedures. As he put it, "Hell, I had been used to prosecuting criminals where the case would walk in the morning and you would have them in jail by night. This looked like it was going to be a longer proposition."⁹ Houck also discussed the matter with state and federal fish and wildlife personnel, and he took a brief tour of the basin.¹⁰ Finally, he talked to two lawyers, Richard Baumbach and William Borah, who had successfully fought a seven-year campaign to prevent a federally funded highway from going through the French Quarter, and they recommended that Houck fight the issue in Washington, not Louisiana: "There is no way you can deal with the Corps of Engineers in Louisiana."¹¹

The National Wildlife Federation played, in Houck's phrase, "a terrific run of poker," for there was very little material from which Houck and his colleagues could fashion a case. The New Orleans District announced its intention of preparing a comprehensive EIS on the Atchafalaya Basin; and, even though environmentalists may have thought the district was dawdling, it would have been difficult proving lack of faith when little construction work was being done. Also, according to Houck, it was highly unlikely that a court of law would

stop the project even without an EIS. Issuing an injunction invited shouldering the responsibility for inundating New Orleans if the Mississippi River flooded. Finally, litigation could arouse an angry Louisiana congressional delegation to try to grandfather the Atchafalaya Basin project and remove it from NEPA jurisdiction.¹²

Houck agreed with Bosch that the 100,000-square-foot center channel project should be nipped before funds were appropriated and dredging began again. He did not believe, as did some members of the Louisiana Wildlife Federation, that the flood control project itself was a bad idea. It was, in fact, a "very good idea if it was done right."¹³ Still, the right way was not at all clear, and the basic strategy was to stop the center channel project and then collect data that would suggest engineering alternatives responsive to both flood control and environmental protection.¹⁴

But first Houck had to educate himself about both the Corps and the Atchafalaya Basin. Upon his return to Washington, he called the Corps' public affairs office in its Washington headquarters. Houck's memo of his conversation shows both his ignorance of Corps planning procedures and the public affairs office's ignorance about available documents dealing with floods and flood control; much of the information the office provided to Houck was neither adequate nor accurate.¹⁵ Nevertheless, by the beginning of October Houck had identified several documents and contacts that could supply information on technical subjects dealing with the Atchafalaya. Topics included endangered species, botanical and zoological examinations, legal studies, and economic studies.¹⁶ He also received helpful studies from Richard Eichhorn, the FWS field supervisor in Vicksburg.¹⁷

On 12 October, Thomas Kimball, the executive director of the National Wildlife Federation (NWF), sent a letter to Lieutenant General Frederick J. Clarke, Chief of Engineers, noting that NEPA required a comprehensive review of "all major federal actions," which certainly would include the Atchafalaya floodways. Since no funds had been requested



Lieutenant General Frederick James Clarke
(1915—), Chief of Engineers from 1969 to 1973.

or authorized for further channelization and New Orleans District appeared to be preparing plans for an EIS, "we have a good foundation for agreement on the need for a full environmental review, and the desirability of maintaining river flow and abating further channelization until this review is completed."¹⁸ Beneath the civility lay the threat of litigation if the Corps did not agree.¹⁹ The letter asked for an opportunity for Kimball and members of his staff to discuss the matter with Clarke.

No one knew what to expect from General Clarke or had considered all the options and complications such a meeting could produce. Certainly, federation staff members were suspicious; the Corps' reputation, deserved or not, as an unrepentant destroyer of the environment undoubtedly colored their thinking. What they quickly found out, however, was their enormous good fortune in dealing with a man of General Clarke's ability. Although a career engineer officer, Clarke differed from most earlier Chiefs of Engineers because he lacked experience in a civil works division or district. Instead, his work had mainly been in traditional military areas. He had been director of military construction, responsible for Army and Air Force installation construction, and he had also served as the commanding general of the Engineer School at Fort Belvoir, Virginia, where combat engineering skills were taught. Before becoming Chief of Engineers, he had served as the deputy chief and was exposed to civil works activities in that position. Still, having no "field experience" in civil works put him in a special category as Chief of Engineers. Neither emotionally nor professionally tied to any particular approach to civil works activities, nor previously responsible for any major planning and construction initiatives in that field, Clarke could face emerging environmental challenges free of preconceptions.

Whereas some of his subordinates saw passage of the National Environmental Policy Act as an attack on traditional Corps procedures and orientation, Clarke saw an opportunity to rationalize and reexamine Corps planning regulations.²⁰ He wanted to change the Corps' defensive attitude, and that meant "doing what the law said."²¹ In fact, Clarke actively sought ways to communicate with the environmental community. In early 1970 he established a six-person Environmental Advisory Board composed of environmental experts such as Roland Clement, National Audubon Society, and Lynton K. Caldwell, professor of political science at the University of Indiana and one of NEPA's drafters. Later, from 1978 to 1981, Houck served on the board, bringing to it an articulate and irrepressible voice for environmental concerns. The board was to advise the Corps on programs and

policies and "contribute to an enhanced mutual understanding and confidence between the Corps and both the general public and the environmental community."²²

Henceforth, too, the term "public meeting" replaced "public hearing," a symbolic change designed to "encourage sincere, meaningful two-way communication."²³ Clarke publicly admitted that the Corps had often conducted its planning activities with only a few outsiders, primarily other government officials; but no longer could the Corps ignore private citizens. Clarke considered "public participation of critical importance to the Corps' effectiveness as a public servant."²⁴ Under him, the Corps issued regulations to ensure continuous, open public meetings during the planning of Corps projects.

Kimball, Houck, and another NWF lawyer, Robert Kennan, met Clarke and his staff on 3 November 1971. Houck had the impression that everyone on the Corps side was "up-tight" except General Clarke, who appeared amiable and was the only one to ask questions.²⁵ Kimball explained that the NWF appreciated the Corps' responsibility to provide flood control in the Atchafalaya Basin, but emphasized that the Corps should not reduce the level of water or alter water quality without first assessing the ecological consequences. In response, Clarke stated the Corps' intention to abide by NEPA requirements and to complete an EIS before initiating work on an increased channel cross section or changing the amount of flow from the Mississippi into the Atchafalaya River. However, funding and time constraints might compel a study less detailed than the NWF envisioned. Kimball thereupon offered the resources of the federation to assist the Corps in writing the EIS. Clarke expressed his thanks and observed that the Corps fully appreciated the importance of the wetlands in the basin, but he did not immediately accept Kimball's offer.²⁶

NWF officials held an inconclusive post mortem back at the federation office. Some were sure that Clarke's advisors would turn him against cooperation. Indeed, his immediate deputy, Major General Andrew Rollins, Jr., had just come to Washington from Vicksburg, where he had served as the division engineer. Reflecting the traditional concerns of the Corps in Vicksburg, Rollins was obviously concerned that no compromises unduly postpone or diminish the Corps' efforts to provide flood protection.²⁷ As for Clarke, he seemed congenial but not particularly tough. In this poker game, the NWF staff decided to call the cards. The lawyers prepared a memorandum suggesting that an agreement had come out of the meeting, when actually only views had been exchanged. The memorandum's major point was that the Corps would defer work in the Atchafalaya Basin that would alter water

quality or supply until an EIS was completed, and the NWF would explore ways to assist the Corps' EIS effort. Two days after the meeting, Kimball sent Clarke a copy of this memorandum with a request that he be advised promptly if the federation's interpretation was wrong.²⁸

Clarke sent his reply a month later. No doubt to the surprise of the skeptics, he agreed to Kimball's proposals, although he probably interpreted them more narrowly than the NWF wished. Neither previously authorized levee construction nor dredging in distributary channels would be affected. However, Clarke agreed not to resume dredging the main channel or changing the operating procedures of the Old River Control Structure until the Corps had completed the EIS, and he welcomed the assistance of the NWF. "In sum, it is my opinion that, as you said, we have made a good beginning. It is my hope that this beginning may serve as an example for others to emulate. I believe that such cooperation on a broad scale will lead to a better America, and in fact, is essential to the well-being of our country."²⁹ That same day, Clarke sent a letter to General Noble, division engineer for the Lower Mississippi Valley Division, directing him to initiate contacts with the NWF "in order to plan the next steps in implementing our agreement with Mr. Kimball."³⁰ On 22 December, Noble wrote Kimball inviting him down to Vicksburg or New Orleans or, if Kimball preferred, Noble would fly to Washington and meet him there.³¹ Clearly, the Corps was intent on cooperation.

For both parties, the agreement postponed issues and established some principles of coordination, but left undecided specific objectives about the Corps' future relationship with the Atchafalaya Basin. Presumably, detailed plans would be decided only after enough scientific data had been collected in the EIS process. Yet, the project's long history already reduced options. An EIS should be produced before a project is authorized or the final engineering plan completed, but this approach no longer applied to the Atchafalaya. The project had been authorized in 1928, and construction had begun soon thereafter; the project could not be started over without exposing lives and property to major floods. Still, the question of how far the clock could, and should, be turned back inspired many discussions in the coming years. No one seriously challenged the implicit assumption that government intervention and assistance would be necessary into the indefinite future.

Both parties may have placed too much faith in scientific research and analysis. The insight dawned gradually that more data may simply lead to more scientific disputes.³² In the case of the Atchafalaya Basin,

the traditional bureaucratic rivalries protracted and exacerbated the professional disagreements. The lack of consensus over the evaluation criteria—how much information is actually needed—occasionally degenerated into questions about an agency's scientific or engineering competence. Moreover, NEPA required only that environmental effects be considered, not that they be determinative. Some environmentalists may have assumed that a severely scientific approach would receive public support, but social and economic concerns—often less tangible and more subjective—needed to be addressed too. Science was not to replace politics, but was to help politicians (and the bureaucracy) make more informed decisions. NEPA's philosophy was still anthropocentric. Humankind should do everything reasonable to live in harmony with nature, but if certain conditions made that relationship manifestly impossible, nature would lose, even if only a little.

Differences in perceptions and attitudes separated the Corps of Engineers headquarters from the district office in New Orleans, posing still another obstacle to progress. Historically, senior Corps officials have encouraged decentralization because it enabled district engineers to respond quickly to local disasters and crises and to work closely with civilian leaders. However, decentralization could be a disadvantage whenever the Chief of Engineers attempted to redirect the Corps, as in the case of General Clarke's initiative. Accustomed to certain procedures and disinclined to fix something that "ain't broke," district employees—overwhelmingly civilians—may resist orders from headquarters, or adopt them at an excruciatingly slow pace. As Fred Chatry, the affable chief of the engineering division in the district, put it, "There was considerable reservation [in New Orleans District] about the propriety of the Corps of Engineers entering into an agreement to halt certain work for which the Congress had made funds available and for which we had the authority to proceed."³³

Also, by 1971, the general design memorandum was eight years old, had been extensively reviewed in public meetings and the media, and commented on by state and federal fish and wildlife agencies. Although not significantly changed in response to any of these reviews, the original GDM had incorporated several fish and wildlife features, and some of these features, such as the access channels, were completed. Dredging delays frustrated New Orleans District engineers, but they remained committed to the goal of eventually dredging a center channel with a 100,000-square-foot cross section. Chatry concluded that district personnel were "good soldiers" in following higher authority despite reservations. In contrast, Houck thought that New Orleans District

personnel were "terribly hard-nosed."³⁴ In either case, undoubtedly the district "soldiers" thought they had endured enough wars.

Institutional Arrangements and Objectives

TO WRITE THE EIS, the Corps and the National Wildlife Federation agreed to form a multidisciplinary steering committee representing some of the principal parties. The procedure significantly modified the normal process for developing an EIS, in which the draft is prepared by the lead agency, reviewed by other agencies and the public, and then modified in response to the data and views generated by the review process. In this case, concerned citizens and organizations were to be involved from the beginning; the approach came to be called "fishbowl planning." Colonel Howard L. Sargent, the Seattle District engineer, had pioneered the procedure the previous year to resolve flood control issues on the Snoqualmie River in Washington.³⁵

The Seattle effort lasted three years. In contrast, the Atchafalaya Basin committee was to last more than a decade and address nearly the entire gauntlet of water resource planning issues: flood control, navigation, endangered species, wetlands management, fish and wildlife habitat, water quality, recreation and public access, and economic and social issues. Besides the Corps representative, who chaired the committee, participants came from the National Wildlife Federation, the Louisiana Department of Public Works, the Louisiana Wildlife and Fisheries Commission, the Department of the Interior, the Environmental Protection Agency, the Greater Atchafalaya Basin Council, and private consultants.³⁶ The committee organized various task forces to address specific issues.

Not every concerned group became part of the steering committee. At an early meeting, committee members debated whether or not to invite LAROLA, the Land and Royalty Owners of Louisiana, to join, and finally decided against it because inviting LAROLA without extending invitations to various other industrial and commercial representatives would be politically difficult.³⁷ Excluding the landowners turned out to be a critical mistake.

Members also argued over who should chair the committee. The Department of the Interior and the Environmental Protection Agency preferred the White House Council on Environmental Quality (CEQ), a three-member council established by NEPA (Section 202) to review federal programs and activities and suggest changes in national policy. The Corps rejected this option, arguing that it contradicted the Corps'

agreement with the National Wildlife Federation. No doubt, the Corps' New Orleans District considered such an approach an unwarranted indictment of its objectivity and integrity. For similar reasons, the Corps also opposed any suggestion that the committee be co-chaired.³⁸ The CEQ remained outside of the steering committee.

Superficially, the steering committee ran smoothly. It held periodic meetings, proceeded with research and data gathering, and slowly obtained the information necessary to complete the draft environmental impact statement (DEIS). On another level, however, mutual skepticism existed about motives and commitment. Houck, who represented the National Wildlife Federation, accused the Corps of trying to complete the EIS without necessary involvement of the EPA and the Department of the Interior.³⁹ Along with an Audubon Society observer, he also accused the Corps of ignoring the task forces and not holding meetings, although the documentation does not support this judgment.⁴⁰ For its part, the Corps came to suspect the Fish and Wildlife Service of using Corps funds for some ecological studies that were insufficiently defined, of marginal utility, and occasionally wasteful. The FWS accused the Corps of intransigence.⁴¹

To some extent, the divisiveness stemmed from different professional approaches. Conflicts occurred not only between agencies, but within agencies such as the Corps, which employed both engineers and environmentalists. Fundamentally, the issue was one of definition, but it raised questions about objectives: was the Corps constructing a flood control project or a comprehensive multipurpose project that included preservation of the environment? The agreement with the National Wildlife Federation implied the multipurpose approach even if flood control remained the primary purpose. Logically, then, the EIS needed to be comprehensive, requiring time-consuming and often costly research in the natural, physical, and even social sciences.

This conclusion frustrated and confused engineers. Many believed that the 1928 Flood Control Act and subsequent amendments preempted later environmental imperatives. For them, the 1928 act encompassed promises and obligations that could not be lightly set aside. Against these preemptive principles, the environmentalists raised the issue of meliorative obligations. These included the promotion of public health and protection of the environment. For them, the future of the Atchafalaya Basin rested on a detailed analysis of costs, benefits, and risks, not on commitments made a generation earlier when environmental and even economic impacts of the project were not so well understood. They wished to study alternatives and reassess long-standing Corps assumptions. The Atchafalaya project was not a

birthright, the environmentalists intimated, but a compact among various levels of government that changes as social and environmental needs evolve.⁴²

Engineers focused on potential flood damages that were immediate and measurable in dollars and cents, while natural and social scientists addressed imprecise issues that were long-term and often required subjective evaluation. Additionally, inadequate information about the Atchafalaya Basin riparian habitat compelled numerous investigations. In short, the engineers favored action, whereas environmentalists often sought further study and research. The difference in approach favored the engineers in any discussion. Mustering both historical and empirical analysis, they confidently predicted the socioeconomic consequences of substandard levees and undredged channels. They talked of the *facts* of flooding, while environmentalists argued about *values*, statements of good or bad that were not always empirically verified. Engineers remained cautious technological optimists who identified attainable goals and questioned emerging natural science methodologies. Environmentalists enthused about environmental quality and scientific analysis, but could only imperfectly define objectives.⁴³

To complicate matters further, steering committee members wondered how the EIS effort would relate to the Atchafalaya Basin Water and Land Resources Study which was initiated in 1972. Although the EPA and Department of the Interior had reservations, the concerned agencies decided to proceed concurrently with both studies. In April 1974, the Corps, EPA, Department of the Interior, and Louisiana state agencies—principally, the Department of Public Works—formed an Atchafalaya Basin Agency Management Group (ABAMG) to oversee the resources study. Over the next few years, the group increasingly dominated discussions on most issues relating to the Atchafalaya Basin and introduced a number of environmental approaches that were incorporated into the final plan.⁴⁴

Impasse and Reorientation

IN NOVEMBER 1974, the Corps completed a preliminary DEIS. The idea of a "preliminary" DEIS was itself novel. No regulations called for it, but New Orleans District personnel and Major General John W. Morris, director of civil works in the Corps' headquarters, agreed that soliciting public comment on a preliminary draft might save time and money later on, even if certain "data gaps" had not been filled because of unfinished research. In January 1975, the Corps held a public

meeting in Lafayette to discuss the preliminary draft, which still favored the 100,000-square-foot center channel project. Houck accused the Corps of acting in bad faith because it had not sufficiently considered alternatives. Even before the meeting, he was investigating the possibility of litigation and consulted with Arnold and Porter, one of Washington's leading law firms, to do some *pro bono* work.⁴⁵

A day-long and long-winded affair, the Lafayette meeting did not let the public air their views until the late afternoon, after the Corps, other federal agencies, and state officials had spoken. This certainly was not what General Clarke envisioned when he had called for more openness. The new district engineer, Colonel E. R. Heiberg III was especially disappointed—but “wasn’t surprised”—that EPA and Fish and Wildlife Service officials attacked the DEIS even though they were involved in developing it. He later recalled that he really did not think he had learned anything at the meeting and suggested that it was “probably unusual at a public meeting that you learn something if you have [had] a full...and complete development of the public interest.”⁴⁶ Nevertheless, Heiberg increased his efforts to address fish and wildlife interests, including the need for additional easements, but steadfastly believed that dredging the center channel should not be delayed much longer. Without the enlarged center channel, a major flood disaster loomed.⁴⁷

In line with Heiberg’s thinking, the steering committee focused more on the environmental aspects of the project, embracing some of the ideas being considered by the agency management group. Of course, environmentalists hoped that a new DEIS would respond to the multipurpose plan and not just to the 100,000-square-foot center channel project. The entire approach continued to bother some senior civilians in the New Orleans District Office since it meant developing an EIS for a project with environmental and other features that had not even been designed.

As the public debate over the Atchafalaya dragged on, many environmentalists came to believe that the best way of preserving the basin was to buy it. Another option was some sort of elaborate system of easements that would allow landowners to retain certain property rights, although that approach might not be any more cost-effective than actual land acquisition. In any case, the basin landowners, including a number of powerful agricultural and timber interests, began organizing opposition to these proposals. While willing to grant flowage easements for a flood control project and generally supportive of the center channel project, they opposed additional easements and, at least initially, resisted any efforts to purchase their property.

Specifically, they objected to proposals for easements for recreation and public access. Twenty-four major landowners conveyed their displeasure to Colonel Heiberg in July 1975. At the beginning of October 1975, the landowners in the middle and lower basin organized themselves into the Louisiana Landowners Association to defend their interests.⁴⁸

By the end of 1975, the Atchafalaya Basin controversy had spilled over state boundaries and was becoming a major national environmental issue. In Washington, Victor Veysey, a recently defeated Republican congressman from California, assumed an influential role as President Gerald Ford's Assistant Secretary of the Army for Civil Works. In Atchafalaya issues, Veysey relied on his scientific advisor, Dr. Benjamin C. Dysart, a professor of civil engineering on leave from Clemson University. Dysart was actively involved in the National Wildlife Federation and willingly served as the unofficial conduit between the Assistant Secretary's office and the federation. He brought the Atchafalaya issue to Veysey, presented to him the environmental point of view, and helped convince Veysey to visit the basin in mid-December 1975.⁴⁹

Veysey decided that no DEIS should be issued until he could assess the situation. His visit to the lower Mississippi valley, including the Atchafalaya Basin, made a substantial, though not entirely favorable, impression on the Assistant Secretary. Major General Francis Koisch, the Lower Mississippi Valley Division engineer and president of the Mississippi River Commission, surprised Veysey with his obduracy. He later said of Koisch, "I wouldn't really have expected a general at that level to be quite like he was. I didn't think that he was very sympathetic at all toward any of the environmental initiatives." Dysart simply indicated that Koisch's lack of sensitivity was "absolute and total." After his trip, Veysey told Major General Ernest Graves, Jr., director of civil works, that he wanted the EIS to address options and alternative plans, including the option of "no action."⁵⁰ Veysey thus aligned himself with the environmental community on this important matter.

Seeing the increased polarization over the Atchafalaya issue, Graves doubted that litigation could be avoided.⁵¹ He instructed General Koisch to have New Orleans District develop a DEIS that would fully consider all adverse environmental effects and recommend mitigation of those effects "to the full extent of our authority."⁵² Exasperated, Koisch wrote Veysey that he had spent a great deal of time on the DEIS "and really don't know how to improve it."⁵³ Others did, however, or at least thought they did. When a new multivolume DEIS was printed in February 1976, a Fish and Wildlife Service official commented, "By

and large, the DEIS again proposes a single purpose flood control project, failing to provide adequate protection for the vast and unique fish, wildlife and environmental values in the Basin.”⁵⁴ To some extent, Graves agreed with this observation. He concluded that Koisch would not, or could not, do what he had requested. He told his civil works staff to address questions of authority and adverse environmental effects, “rather than waste any more time trying to get adequate answers from LMVD [Lower Mississippi Valley Division].”⁵⁵ Subsequently, Graves “reluctantly concluded that the DEIS requires revision before circulation for state, agency, and public comment” and suggested that course of action to Veysey.⁵⁶

The Assistant Secretary agreed with Graves and directed the Corps to develop a new document that embraced both a revised general design memorandum—which included environmental features still requiring authorization and presented options to the 100,000-square-foot center channel—and a revised DEIS.⁵⁷ Neither Graves nor Veysey questioned the primacy of flood control. For that matter, neither did the environmentalists. However, this new flood control plan was to have an environmental soul. The integrated approach was novel and technically violated Corps regulations which specifically noted that “environmental statements will constitute a document separate from other Corps papers....”⁵⁸ Those who swore by regulations needed to obtain new flexibility.

Koisch resisted the new direction. He advised the Office of the Chief of Engineers (OCE) to file the DEIS with the Council on Environmental Quality “so that we can proceed with work on the main channel at the earliest possible date.”⁵⁹ Koisch’s obtuseness annoyed Lieutenant General Morris, Chief of Engineers and the former director of civil works. In an unusually formal way, Morris disapproved Koisch’s suggestion and directed him to be ready to file a revised GDM and EIS with the council no later than 30 June 1977, and by 31 March 1977 if at all possible.⁶⁰ Koisch agreed to work toward the earlier date but urged that work proceed on the main channel, which could not pass the project flood unless it was improved.⁶¹ In a public meeting at Morgan City, he blamed the steering committee for delaying the work on the central channel. The committee’s recommendations, Koisch said, “were completely out of line with the law,” meaning, presumably, the authorized flood control project.⁶² He seemed to ignore the fact that the committee was following the guidance of Colonel Heiberg, who had been promoted and transferred to a new assignment.

Disputes between the Corps and environmental organizations delayed work on the new document. The New Orleans District wanted to prepare a GDM and DEIS by March 1977 that would cover only the authorized project. Then another GDM and DEIS would be completed by the end of 1977 that would cover unauthorized parts. Personnel from the Washington headquarters and the division office in Vicksburg agreed to this schedule.⁶³ However, the National Wildlife Federation and the Department of the Interior protested.⁶⁴ General Graves thereupon instructed Koisch at the end of 1976 to develop within the following year a comprehensive report addressing both authorized and unauthorized features.⁶⁵

In Atchafalaya matters every action seemed to bring an equal and opposite reaction. Graves' decision immediately elicited protests from the Louisiana Office of Public Works, whose director was upset that no Louisiana officials, or even the Louisiana congressional delegation, had been consulted and that further delays would result in "greater flood threats, at higher levels, and for longer periods of time."⁶⁶ Newman Trowbridge, a lawyer representing the South Louisiana Landowners Association (the "South" was dropped in November 1977 as the association began addressing other issues around the state) complained to Colonel Early J. Rush III, the New Orleans District engineer. He wrote that the delay was "a grave injustice to those persons who have too long suffered from an inadequate flood protection program."⁶⁷ Even Governor Edwin Edwards got involved, noting in a letter to a Louisiana congressman, "A concerted effort is needed to overcome the many delaying problems affecting this authorized flood control project."⁶⁸ Nevertheless, Graves stood by his decision.

Colonel Rush wrote Roy Aguillard, the director of the Louisiana Office of Public Works, that he regretted the delays, which, he claimed, were caused by concerns "expressed by other agencies and environmental groups" when the DEIS was circulated in February 1976.⁶⁹ The district engineer—whom Houck called a "hard head" quite different from Heiberg—disingenuously overlooked the concerns of Veysey and Graves and the statements of various senior Corps officials about the inadequacy of the DEIS.⁷⁰ Environmentalists may have raised the issues, but the Corps caused the delay.

Debates over environmental issues in the Atchafalaya Basin continued, reflecting a nationwide dialogue on the appropriate balance between ecosystem protection and economic development.⁷¹ Increasingly, the discussions occurred among participants in the Agency Management Group rather than in the steering committee, which gradually became dormant. The National Wildlife Federation expressed

apprehension over this development and sought Secretary Veysey's assistance to resurrect the steering committee. However, Charles "Jack" R. Ford, Deputy Assistant Secretary of the Army for Civil Works, suggested in early October 1976, that the steering committee be phased out and that landowners and the National Wildlife Federation be allowed to attend the management group meetings. This solution mollified the environmental groups since it reaffirmed the Corps' commitment to producing a comprehensive GDM and EIS in one package. Subsequently, environmental representatives often attended ABAMG meetings.⁷² However, this change did not particularly improve the timeliness or the quality of the reports and studies. The lack of progress frustrated both environmentalists and engineers. It seemed that neither time nor money was enough to resolve matters.

No doubt, the frustrations clouded perceptions of the ABAMG's worth. Preoccupied with immediate and complex problems, ABAMG participants forgot the advantages they enjoyed over groups and citizens still dependent on the public review process to influence planning. Optimistically, the post-NEPA review process encouraged the dialogue at public meetings that General Clarke sought, but the approach did not always work. Time constraints and headline grabbing often dictated that private citizens and organizations focus on only the most objectionable features. Consequently, public meetings could polarize views further and, contrary to the hopes of Clarke and others, increase mutual distrust rather than enhance mutual understanding.

In contrast, the ABAMG effort permitted continuous involvement in planning. Representatives of environmental organizations especially profited, for their regular attendance at review and task force meetings allowed them opportunities to closely examine a wide range of issues and to influence decisions. ABAMG members learned not only the positions of other parties, but the justification for those positions. The procedure created the framework for long-term, systematic analysis.

The process also created seemingly endless controversies within the ABAMG. The management group sought to draft a multipurpose plan and an EIS, using careful scientific investigations, but participants approached these investigations with values and concerns that reflected competing bureaucratic visions. Mired in reports, studies, and an endless number of issues, they spent little time seeking ways to reconcile fundamental differences. What was true in the 1870s remained true in the 1970s: there was not one vision for the basin; there were many.

Chapter 10

Defending the Turf

MOST CANOEISTS PADDLING in the Atchafalaya Basin's bayous probably paid little attention to the acrimonious debates dividing the Atchafalaya Basin Agency Management Group. Their vision was simpler. For them, the basin was a comingling of flora and fauna, water and land, unlike anywhere else on Earth. Despite mosquitos, impassable lavender blankets of water hyacinths,¹ or frequent summer showers, canoeists relished the solitude and beauty—and hoped that the basin's attractions would be preserved forever.

In 1970, the basin was home to a small and declining population whose chief sources of revenue came from agriculture, forestry, fisheries, or mining, the four industries that claimed about a quarter of the work force. Slightly over 10,000 people lived within the actual floodway. Just over half resided in the three small towns of Simmesport, Melville, and Krotz Springs, which were protected by ring levees. The figure excluded the Morgan City—Berwick—Patterson complex, which technically was outside the floodway system, although the towns sit at the system's southern end.²

Powerful institutions controlled the basin. Petroleum and lumber interests provided employment and income, but they also damaged the environment. By the mid-1970s, they had crisscrossed the basin with over 500 canals totaling some 600 miles in length. When the 1972 Clean Water Act charged the Corps to regulate dredge and fill activities in wetlands, the Corps issued permits to minimize environmental destruction in the basin caused by the construction of canals. However, the Corps itself had contributed to the monumental manipulation of the basin's waters. Since 1954, the agency had cut off 22 natural distributaries in order to accelerate the development of the main Atchafalaya channel.³

Yet, the exploitation of the basin's natural resources buffered its economy. The 19 parishes that touched upon the Atchafalaya Basin produced 74 percent of the state's salt, 51 percent of its petroleum, and 47 percent of its natural gas. Significantly, while most of Louisiana suffered from over 6 percent unemployment in the 1970s, six of the state's 64 parishes were below that level. Five of the six were in south

Louisiana, including the coastal parishes of Terrebonne, Lafourche, and Iberia, where mineral production accounted for 14 percent of the total employment.⁴



The Atchafalaya Basin near Buffalo Cove—"Wet and Wild."

Atchafalaya residents and visitors felt a kinship with the basin and a sense of place. For members of the ABAMG, however—especially, the federal representatives—the Atchafalaya Basin was not so much a *place* but a set of intractable *issues*, some of which substantially affected life beyond the basin's boundaries, such as flood control and navigation. Like the story of the blind men touching the elephant, various organizations "touched" the Atchafalaya Basin and described it in ways that mirrored their own biases and concerns. The Environmental Protection Agency sought ways to improve water quality. The Fish and Wildlife Service attempted to protect and restore fish and wildlife habitat. The Corps of Engineers focused on flood control and navigation. Agencies and private organizations attempted to ascertain what the basin once was to help determine what it should be, but they often could not agree upon either the baseline or the objectives.

Federal and state agencies united on one point: the status quo was unacceptable. Using the Corps' own figures, in 1978 the FWS outlined the potential loss if changes were not made. Continued conversion of land to agricultural use could eradicate up to 60 percent of the basin's bottomland hardwood. Siltation and reduced water levels threatened up to 50 percent of the open water areas. Without proper water

management, up to 40 percent of the crawfish harvest was endangered, and the average commercial fish harvest could decrease as much as 30 percent. Moreover, up to 30 percent of the waterfowl, 40 percent of the songbirds, 55 percent of the squirrels, and 60 percent of the deer could be lost.⁵ While these figures were "worst case" and tentative, they still were shocking. Good estimates remained elusive. Even the Corps' final environmental impact statement of 1982 contained inconsistencies. One page states that 123,000 acres of forested wetlands will be converted to agricultural use if the project is not adopted. Another page concludes that almost 200,000 acres will be lost.⁶

All of these figures need to be understood in the context of a nation and a state rapidly losing their wetlands. By the mid-1970s, the nation's 48 contiguous states had lost over half of the 215 million acres of wetlands that existed when the Pilgrims landed. Annual wetland losses amounted to over 450,000 acres, an area approximately half the size of Rhode Island. Louisiana was losing about 40 square miles or 25,000 acres of coastal marshland a year because of rising sea levels, although marshland increased in Atchafalaya Bay because of sediment deposited by the Atchafalaya River. Conversion to cropland had eliminated wetlands in Louisiana's hardwood forests, including lands within the Atchafalaya Basin. Of the original 24 million acres of bottomland hardwood forests in the lower Mississippi River's alluvial plain—over half in Louisiana and the rest in Mississippi and Arkansas—only about 5.2 million acres remained by 1980.⁷

The ABAMG could identify the fundamental problems within the Atchafalaya Basin, and it certainly heard the growing nationwide demands for environmental protection. However, agreeing on solutions required both organizational soul-searching and mutual trust. In the end, probably everyone compromised more than they thought possible at the beginning of the process. Occasionally, the complexities of the Atchafalaya defeated the most committed optimists. Some potentially fruitful approaches evaded empirical verification, and investigators argued over the sufficiency and relevance of data. Technical jargon and complex methodologies often ignored the fundamental problem of resolving differing values; in fact, they may have actually delayed the resolution of issues. For engineers, the Atchafalaya story raised profound questions about their ongoing responsibility for the land they transform and the people they affect. For everyone involved in deliberations about the basin, the Atchafalaya story raised the difficult question of when the scientific quest for truth should yield to the political art of compromise.

The Environmental Protection Agency's Approach

THE ENVIRONMENTAL PROTECTION AGENCY was a revolutionary organization. Before its establishment in 1970, the application of science to natural resource development was intended to feed free enterprise—science in the service of present and future economic development. Within the federal government, this approach clearly began in 1871 with the establishment of the United States Fish Commission, soon the principal promoter of fish hatcheries in this country. The commission did not so much protect fish—in fact, hatchery-bred fish weakened fish populations—as serve commercial fishery interests. Likewise, the U.S. Forest Service's encouragement of sustained-yield forestry at the beginning of the century favored development. Science was to increase the resource and to determine the maximum amount that could be exploited before sustainability was threatened; using anything less than that maximum amount was considered wasteful and inefficient.⁸

With the advent of the EPA, natural resources science took on a different purpose. "Waste" no longer meant failure to exploit the maximum amount of the resource. Rather, it meant using the resource in ways that endangered either the environment or public health. The fact that Congress charged EPA to identify and reduce threats and to set standards in both areas ensured an ambiguous definition of the word "protection" in the agency's name. Despite the resulting confusion, the agency was full of energy in the early 1970s as it mobilized both science and technology to improve the environment and public health. EPA's work required enormous amounts of data and much scientific testing. The extrapolation of data into either the past or the future was fraught with error and invited controversy, and the establishment of standards which might constrain economic development threatened political intervention. At the very least the agency needed to manage an enormous amount of uncertainty.

In the Atchafalaya Basin, as elsewhere, EPA staff and contractors worked long and enthusiastically, gathering data and preparing reports. Certainly, one reason for this diligence was to demonstrate the agency's capability to congressional committees. The work focused on water quality and was the most important aspect of the Water and Land Resources Study. EPA's Office of Research and Development in Washington initially assumed overall responsibility. Beginning in the summer of 1973, the agency's Environmental Monitoring Systems Laboratory (EMSL) in Las Vegas provided technical assistance by gathering and collecting water and land quality samples. This work

involved the first use of helicopters to collect samples over a large and generally inaccessible area. The results were so spectacular that EPA's Washington office asked EMSL to take over the entire water and land monitoring study in July 1974. Subsequently, the laboratory worked closely with Region 6 of EPA (headquartered in Dallas), EPA's Office of Environmental Review, and, of course, the Atchafalaya Basin Agency Management Group and steering committee.⁹

The EPA continued its investigations through 1977. It collected water and biological samples from 148 stations scattered throughout the Atchafalaya Basin. The samples provided information on water quality, productivity, and energy and nutrient export. The agency compared Atchafalaya water quality with that of other Louisiana, eastern, and southeastern lakes. The samples showed that the basin's waters were extraordinarily rich in nutrients; available nitrogen and phosphorous were more than enough to support bacterial breakdown of organic matter. At the same time, however, the analyses confirmed that enormous amounts of silt settled in the basin, which degraded both the environment and the basin's flood-carrying capacity.¹⁰

While EPA continued its investigations, it began to publish its findings. One of its first reports was *Environmental Base and Management Study—Atchafalaya Basin, Louisiana*, published in February 1975.¹¹ The report presented an overview of the geomorphologic development of the basin, including the impact of human intervention and the evolution of basin hydrology. Most important, it introduced the concept of management units to address basin hydrologic problems. Philosophically, the idea reflected the influence of Ian L. McHarg, who in his book *Design with Nature* (1967) argued that human development should complement natural ecosystem processes. He suggested that ecosystems were *value* systems. Their ecological value depended on the level of energy created, and their social value hinged on their necessity for human life. McHarg's holistic emphasis was heavily influenced by the ecologist Howard T. Odum, who described ecosystems in terms of energy flow and exchange, and it anticipated both the Gaia theory of an interdependent, living Earth and the concept of sustainable development that became popular in the late 1980s.¹²

Within the Atchafalaya Basin, natural processes and human intervention had combined to produce distinct environmental and hydrologic units which lent themselves to tailored management schemes—to designing with nature. It is not clear who developed the idea of using hydrologic management units. Charles Fryling, a professor of landscape architecture at Louisiana State University, environmental activist, and member of the steering committee, claimed he had, and he

no doubt was familiar with McHarg's ideas since they were closely identified with the field of landscape architecture.¹³ However, EPA contractors and officials claimed that they first applied the approach to the Atchafalaya Basin.¹⁴ Johannes van Beek, vice president of Coastal Environments, Inc., the primary EPA contractor for Atchafalaya studies, suggested that he had already used it in the late 1960s while working at LSU. In that case, the approach had been used to identify corridors within the Louisiana coastal zone that could be used for human development with minimal impact on the wetlands and natural processes.¹⁵ Certainly, Coastal Environments, on behalf of the EPA, developed the specific methodology, data, and recommendations, while Fryling became a staunch advocate and popularizer of the approach within the steering committee.

As Coastal Environments refined its methodology, EPA developed four principal objectives for management units:

1. To mimic, as closely as possible, historical natural water overflow patterns (1949–78 period of record).
2. To provide proper water movement throughout the units.
3. To restrict sediment movement and deposition within the units.
4. To supply nutrient and organic matter to estuarine and Gulf areas.¹⁶

Keeping these objectives in mind, Coastal Environments identified management units within the basin that mimicked as closely as possible the "aquatic ecosystem hydrograph" and reduced sediment deposition.¹⁷ The company explained the entire concept in a May 1977, EPA publication, *Plan and Concepts for Multi-Use Management of the Atchafalaya Basin*. The monograph listed 14 management units:¹⁸

West of the Atchafalaya River	East of the Atchafalaya River
West Atchafalaya Floodway	Morganza Floodway
Bayou Fordoche	Alabama Bayou
Warner Lake	Bayou des Glaises
Cocodrie Swamp	Pigeon Bay
Beau Bayou	Flat Lake
Buffalo Cove	The Crevasse
Six Mile Lake	Upper Belle River

To ensure that the water inflow and outflow of these units could be properly regulated, the contractor proposed the installation of locks, control structures, pumping stations, controlled outlets, and channels. These various measures would be complemented by initiatives often involving local cooperation, such as better designed and laid out industrial facilities to minimize pollution, buffer zones to restrict the spread of polluted waters, and biological treatment of wastewater.¹⁹

Although not reflecting official EPA policy, the report aggravated the Corps even before its publication. After reviewing a prepublication draft, Colonel Rush informed EPA that the document lacked much essential information and its implication that human intervention caused most environmental changes was unwarranted. Moreover, the term "poor water quality" was vaguely defined. Despite the colonel's comments, one of the final draft's principal conclusions was that current water management in the Atchafalaya Basin, coupled with the associated reduction of the "functional floodplain," had led to the "enrichment of the ecosystem and accelerated succession to a more terrestrial environment." These developments, in turn, impeded "the need to preserve the basin's renewable resource values based on its aquatic habitats and to prolong useful life of the Atchafalaya Basin Floodway."²⁰

While the Corps may have been concerned over the general approach suggested by Coastal Environments—indeed, the concept generated much debate even within the EPA—a more specific and heated issue focused on the production of hydrographs for the management units. The hydrographs were to indicate the optimum water levels for different times of the year in each unit. A major problem was to determine when the basin should be "dewatered," i.e., water drained back into the main channel. Timber interests maintained that summertime dewatering was necessary for optimum timber growth. However, if the units were dewatered too early, the FWS argued, there would be an adverse impact on crawfish and the fishing industry.

Discussions became vitriolic. In one meeting in May 1977, Lewis C. Peters, who represented some timber interests, suggested that the Fish and Wildlife Service had overlooked the significance of bird depredation on gravid female crawfish, implying that some of the damage attributed by the FWS to dewatering actually resulted from other factors. To this, New Orleans District biologist David Soileau replied, "Bullshit." Daniel Tabberer, a FWS representative, countered that flooding would actually increase the growth rate of trees. Peters unimaginatively responded, "Bullshit."²¹

Agency officials and representatives from private interests continued to discuss the hydrographs, with equally inconclusive and acrimonious results. Some disagreements touched on questions of approach and technique. For instance, the Corps thought the FWS request for more detailed contour maps to help prepare hydrographs was baseless. More questions involved the delicate issue of balancing economic and environmental objectives. The landowners wanted to delay dewatering until 15 June, while the FWS wanted to begin dewatering in March. Disagreements existed over what the low water stage should be; the FWS suggested that the stage should not be below the average September water level for the period from 1950 to 1977 in each management area. Some timber interests thought dewatering should result in less water in the management units than the FWS had contemplated, but the FWS feared that lowering levels further would leave the areas "bone dry." Robert Schroeder, a senior planner in New Orleans District, called for more forestry expertise to resolve some of the issues. Typically blunt, Soileau charged that many of the landowners were not interested in timber management but in drying out the basin to grow soybeans. A fundamental disagreement developed over the exact purpose of the hydrographs. Searching for a comprehensive management solution, the Fish and Wildlife Service used the term "multipurpose hydrographs," but the EPA preferred the term "aquatic ecosystem hydrographs," thereby implying that the hydrographs were principally designed to optimize conditions that favored aquatic growth. Although standing by the EPA preference, Victor Lambou, the EPA project officer for many of the management unit studies, came up with 12 different names for hydrographs, but the issue remained unsettled.²²

In August 1977, the agency management group met again, and this time Soileau joined forces with Tabberer and Lambou, agreeing on the term "optimum aquatic hydrographs." However, other Corps representatives objected that the Corps should compare alternatives only to the "most probable future" and accused Soileau of not knowing his Corps of Engineers regulations. In this internecine quarrel, Soileau retorted that "the most probable future" would be detrimental to fish and wildlife and would have to be mitigated. This was a bureaucratic and philosophical dispute that could not be easily resolved, and within a year Soileau had joined the Fish and Wildlife Service. Fortunately, the meeting was productive despite the tension. The management group decided to accept the FWS hydrographs, with minor modifications, and call them "aquatic ecosystem hydrographs," the EPA term. Based on recommendations of professional foresters, the management group also

concluded that the dewatering period should extend from 15 April to 15 November.²³

Setting aside the incessant debates over the purposes of the hydrographs, many of the participants in the controversy simply had unrealistic expectations. Strict adherence to hydrographs that reflected *average* annual precipitation and water levels would ensure only that hydrologic regulation would rarely, if ever, respond to the precise needs of any particular year. Lambou hoped to develop management units that would be self-regulating; structures such as flood gates which required human intervention would be kept to a minimum and low-lying levees around the management units would be constructed to be automatically overtapped at appropriate times (which would be different from year to year).²⁴ To what extent this more passive approach would succeed remained questionable.

The Fish and Wildlife Service Makes Its Move

BY THE MIDDLE of 1977, it was obvious that even the December 1977 deadline for completion of the comprehensive DEIS/GDM report would not be met. The Corps blamed the Fish and Wildlife Service for much of the delay. In June, for instance, Rush complained to Kenneth Black, the Fish and Wildlife Service's regional director, that a FWS habitat evaluation study was not simply filling gaps as Black had suggested, but was reevaluating the entire area. "As such," Rush continued, "this appears to be an unnecessary duplication of the work done under previous contracts.... We request that you reconsider the need or scope for this apparently duplicative effort." The colonel complained that the additional field sampling, including revisions of hydrographs, would delay completion of the final report by several months at least.²⁵

Certainly, the Fish and Wildlife Service wasted some time and money, if for no other reason than the lack of consensus over what was to be analyzed, how the analysis should be done, or what significance to attach to the conclusions. Academicians suggested various projects, and if they were both qualified and lucky, they received Fish and Wildlife Service contracts, but the funds came from the Corps. Robert Misso, the FWS representative on the agency management group in the late 1970s, admitted that some of the studies were strange, "just academic-type biological studies that didn't seem to lead anywhere."²⁶ Misso also pointed to another problem hampering completion of the report in 1977. The participants on the agency management group did

not work well together: "We couldn't agree on whether or not we would have hot coffee with or without the cream and sugar. The hostility, the heavy air, the cold reception—it's almost as if every time someone made an observation, everyone else was ready to attack because there must have been an angle to it."²⁷ The Corps was anxious to return to project construction and thought some of the FWS objectives were fuzzy at best. FWS personnel wanted to do detailed scientific research and grew weary of the Corps' suspicions and impatience.

Delays produced further frustration. Governor Edwards requested congressional support to resolve the conflict between the Corps and the Fish and Wildlife Service, and the Louisiana delegation subsequently contacted the Department of the Interior to try to expedite completion of the comprehensive report.²⁸ Neither the Fish and Wildlife Service nor the EPA thought it was being taken seriously. According to Misso, "It's as if the Corps could always find the excuse for why we didn't need what we thought we needed." Misso thought the Corps was not interested in environmental problems and was quite happy with the old 100,000-square-foot center channel proposal.²⁹ The Corps believed the Fish and Wildlife Service was preventing improvements that were essential to protect the lower Mississippi valley from potentially devastating floods.

Relations between the Corps and the Fish and Wildlife Service worsened in 1978, even though a new district engineer, Colonel Thomas Sands, tried to improve matters. His misfortune was that by the time he arrived in New Orleans in August, too much damage had already been done.

The FWS representatives complained that the Corps refused to budge on important environmental matters, such as mitigation (compensation for damage to the environment, usually by providing more environmental



Colonel Thomas Allen Sands (1935–) was the New Orleans District engineer from 1978 to 1981. He was also the engineer for the Lower Mississippi Valley Division and president of the Mississippi River Commission from 1984 to 1989.

features or by setting aside land of equal or greater value), the merits of acquisition of the floodway, and the necessity of using specific values to measure recreational use. They also maintained that the New Orleans District did not provide them with information they needed to complete their studies. Furthermore, they disputed the Corps' analytical approach on certain questions.³⁰ Usually the debate was over the sufficiency of data, such as the dispute over the information thought necessary to determine the growth rate of different aquatic species.³¹ The New Orleans District said there was not enough time or resources to do this, but Fish and Wildlife Service representatives rebutted that the absence of quantitative comparisons was "contrary to sound resource planning."³² They also wondered why the Corps would assume that the "future without project" condition would be a 100,000-square-foot center channel—what the Corps' had desired in the first place. To this, Colonel Rush had accurately replied that the center channel would scour a 100,000-square-foot cross section naturally, although, of course, scouring the channel would take longer than dredging it.³³ Even though the district engineer may have been right on this point, no one in the Fish and Wildlife Service trusted him.

FWS officials complained not only to the district, but also to the Lower Mississippi Valley Division and to the Office of the Chief of Engineers. All around they saw evidence of stagnation, if not outright obstruction, on the Atchafalaya issue.³⁴ Landowners circulated material that reminded Louisianans that the Fish and Wildlife Service is "a *federal* agency, replete with high-handed bureaucrats who are more at home in palatial Washington offices than Louisiana swamps."³⁵ Roy K. Wood, special assistant to the secretary of the Fish and Wildlife Service Southeast Region, noted, "The landowners, with the aid of some hunters and fishermen, have stymied virtually every move of the conservationists to save the Atchafalaya by means involving federal acquisition;" nor did he see any movement on the state level. He appreciated Houck's efforts, but Houck was located in Washington and "is hardly in a position to provide sustained leadership in Louisiana."³⁶ The Atchafalaya project, Misso later recalled, "was going down the tubes."³⁷ To a steadily growing number of Fish and Wildlife Service officials, the course of action seemed obvious. Now was the time for the FWS to strike out on its own.

Over the next few months, Fish and Wildlife Service officials developed a plan that logically culminated their efforts of the last few years, but in doing so they broke the unwritten rules of the bureaucracy. They abandoned any pretense of negotiation and coordination and, ignoring both federal and state engineers, appealed directly to the

public. The first hint of the proposal came in a 28 July 1978 letter from Ken Black to Lynn Greenwalt, the director of the FWS, which included the minutes of a Fish and Wildlife Service Land Acquisition Review Committee held the previous week. Directing Greenwalt's attention to the minutes, Black wrote:

Please note the last item of the attached. It is the first step—a sketchy one admittedly—of what will likely be a proposal coming to you before too long to acquire about \$87 million worth of the lower Atchafalaya Basin. Just want you to have an opportunity to fasten your seat belt!! Our work with CE [Corps of Engineers] to date has just about led us to the conclusion that this may be the only way to preserve that valuable habitat. That being the case, this could perhaps be viewed as a ploy or as a strategical move (and it would be valuable from that standpoint). The more I think about it, however, the more sense it makes!³⁸

Black thought the supporters of the proposal would be legion and even ventured that among those supporters eventually could be the Corps “once that opportunistic organization perceives that [land acquisition] would grind its axe exceedingly well.” He admitted that special legislation would be necessary, but did not think that an insurmountable problem. The major obstacle would be the landowners, “who are sitting on the respective edges of their chairs waiting for the waters to recede so that they can clear and plant soy sauce.” However, obligations to them could be fulfilled through compensation.³⁹

Misso, Black, and Russell Earnest, the area manager of the Jackson, Mississippi, Fish and Wildlife Office, met with Colonel Sands on 21 August to discuss their concerns. They raised the issue of land acquisition and thought Sands was sympathetic to the approach.⁴⁰ However, they consulted with no one else in the district office and suspected the proposal would have to overcome substantial resistance before it could emerge as a joint Department of the Interior/Corps of Engineers proposal.⁴¹ Black preached caution to his colleagues, reminding them that their superiors expected them to work with the Corps to develop the land acquisition proposal and not to strike out on their own. Earnest agreed, noting that the “Jackson Area Office will have to continue to work closely with the Corps of Engineers, documenting their efforts and their successes until we are certain that an alternative approach is the only way to go.”⁴² Nevertheless, he, Misso, and others began crafting a formal proposal to present to Greenwalt for approval.

The proposal, completed in draft form in September, called for the conversion of 443,000 acres of private land in the basin to public ownership. Though unstated, an acquisition of that size implied condemnation proceedings, for there were far too few "willing sellers." Once the land was acquired, an Atchafalaya Fish, Wildlife and Multi-Use Area would be established for "flood control, fish and wildlife conservation, and public recreation." The purchase price would be, as Black had already indicated, approximately \$87 million, or about 10 percent of the cost of the currently authorized flood control plan for basin, which included no environmental features. The area would be jointly managed by the Department of the Interior and the Louisiana Department of Wildlife and Fisheries.⁴³ Misso and Cary Kerlin of the Lafayette Fish and Wildlife Office presented the plan to Colonel Sands on 19 September. Sands was "complimentary of the document" and suggested that it be formally presented to the agency management group at its next meeting in October.⁴⁴

About the same time, Greenwalt discussed the proposal with Assistant Secretary for Fish and Wildlife and Parks Robert Herbst who had no problem with the proposal so long as it was orchestrated properly. Greenwalt warned Black:

It is *vitally important*, I think, for the folks to make sure that they follow procedures in developing and producing this, since if they irritate somebody there is sure to be question [sic] about the propriety and the adherence to process and all the rest. We have all been down that path at one time or another....I do know that if we achieve any degree of success at all, there will be enough heartburn among an assortment of opponents to what we're doing that they'll attack the procedure, question the legality of the details and all the rest—they *always* do. For the well-being of our folks I'd like to make sure those bases are properly covered.⁴⁵

At the agency management group meeting, 9 to 13 October, the FWS requested that the Corps, EPA, and the Louisiana Office of Public Works adopt the proposal as the group's official position. The EPA agreed. The Corps thought the proposal had merit, but would not officially endorse it. The Office of Public Works observed that it was bound by legislative act to oppose any proposal to acquire privately owned lands by condemnation for fish and wildlife purposes. Based on EPA's agreement and the Corps' qualified endorsement, Earnest suggested that the FWS "independently surface the Report for public

consideration.”⁴⁶ Greenwalt agreed when he met Ernest and Misso on 17 October, specifying that the report not be printed in color since that would require additional approval and “inordinate delay.” He also requested that the publication be postponed until after the November election.⁴⁷

A few days later, Misso, Kerlin, and David Soileau, who had by then left the Corps and joined the FWS, telephoned Houck. One subject of discussion was the title of the report. While all could agree on the main title—“The Atchafalaya: America’s Greatest River Swamp”—they disagreed on a subtitle. Houck wanted “A proposal for a Flood Control Plan,” but Soileau said the proposal was not a flood control plan, although it was compatible with flood control. Misso suggested “A New Flood Control Concept—Establishment of the Atchafalaya Fish, Wildlife, and Multiuse Area.” Eventually, his suggestion was accepted with the words “A New Flood Control Concept” eliminated. More important, Houck expressed concern about the FWS plan alienating potential supporters of a more moderate approach. He stressed that he wanted to avoid condemning private land for public access “across the board.” In any case, he thought that Louisiana would eventually kill the proposal by enacting legislation forbidding state participation in the acquisition of private lands for fish and wildlife. He worried about the inflexibility of the Fish and Wildlife Service’s position and thought that environmentalists should not be “locked into the document in its present form.” Houck believed that the environmental community had only “one more good shot at the Atchafalaya” and feared that the FWS proposal could scuttle chances for success.⁴⁸

In New Orleans, Houck met with 16 conservation leaders and proposed various options in lieu of the FWS plan. In general, he favored, according to Soileau, “a strong thrust, with some willingness to fall back later.”⁴⁹ Houck’s antagonism worried Misso, who realized that Houck could stir up opposition in Washington and kill the chances of ever releasing the report. Anxious that Washington-level officials not reconsider the proposal, Misso decided to expedite the report’s release even if that meant publishing before the election.⁵⁰

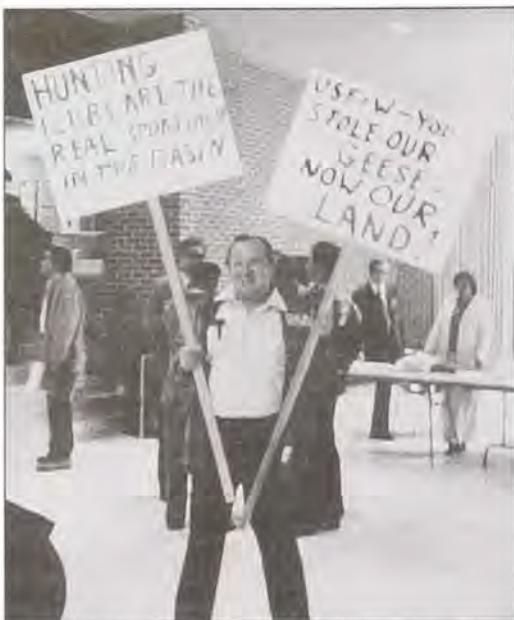
On 27 October, Mike Cook, the outdoor editor for the *Baton Rouge Morning Advocate* had a scoop. He broke the story of the Fish and Wildlife Service proposal based on information provided him by a FWS official.⁵¹ The FWS did not officially release the report for another two weeks—after the general election. The report’s publication marked a turning point in the Atchafalaya story. Houck thought that fish and wildlife interests were being taken down “a very dangerous

path.”⁵² Misso said that the landowners “went through the roof.”⁵³ If anything, that may have been an understatement. Debates were held on television and radio stations. Billboards went up around the state denouncing the Fish and Wildlife Service and claiming that the federal government would keep hunters and fishermen out of the basin. That was a particularly volatile issue, and Houck wrote Greenwalt, “On behalf of the Louisiana environmental community, we ask that you not commit USFWS—in writing or public dialogue—to *condemning* public access in the Basin.”⁵⁴ Actually, the Fish and Wildlife Service proposal did not prohibit hunting and fishing at all. Nevertheless, the landowners felt threatened. Newman Trowbridge wrote that “every man, woman and child who believes in the right to own private property” should protest federal confiscation.⁵⁵ The landowners’ reaction made the Fish and Wildlife Service proposal a headline item, giving it far more attention than anticipated.

There is no evidence that FWS personnel understood that the proposal to purchase the Atchafalaya Basin was not new, but went back at least to the New Deal deliberations of the 1930s and was revisited in the 1950s. Certainly, if they had realized this history they would have used it to advance their position. History may produce honorable, and often conservative, lineages for the most radical proposals.



Robert Schroeder and Joseph Dykes of the New Orleans District read responses to the public meetings on the Atchafalaya Basin, January 1979.



Public meeting on the Atchafalaya Basin,
10 January 1979.

When the Corps held hearings in five cities around the state in January 1979 to discuss ten options for developing the Atchafalaya Basin floodway system—the comprehensive report was still more than a year away—the real estate issue generated by far the most discussion. While many of the speakers favored some sort of a multi-use area, they disagreed on whether easements or acquisition should be used. Of the 533 statements presented at the five meetings, 222 favored public acquisition, 80 favored easements, and 208 opposed any acquisition pro-

posal. Other speakers were undecided or at least did not mention the issue.⁵⁶ Soon after the meetings were concluded, the Fish and Wildlife Service supported the efforts of A. Foster "Foxy" Sanders III, a Baton Rouge lawyer, to form a coalition of environmental organizations to fight for the basin. The group adopted the name STAB (Save The Atchafalaya Basin). Not everyone in STAB completely supported the idea of public acquisition. Some, like Sanders, hoped to find a compromise solution.⁵⁷

STAB and the Fish and Wildlife Service were on one side of the issue. The landowners were on the other. Governor Edwin Edwards did not take sides, but he did help the Fish and Wildlife Service by suggesting that the public acquisition of land owned by large companies was very different from the condemnation of farms and homesteads. Edwards could have seriously undermined the Fish and Wildlife Service proposal. Indeed, the state Wildlife and Fisheries Commission opposed federal land acquisition within the basin, and Edwards' secretary of natural resources urged the governor to oppose the approach totally. Edwards refused to do that. Neither did he exercise a high level of energy toward resolving the issue. When FWS personnel requested a meeting with him to discuss their proposal, he requested them to send him a written synopsis instead.⁵⁸



**The U. S. Department of Interior says
we need to buy this land in the
Atchafalaya Basin to keep the
landowners from growing soybeans!**

SMIG

St. Mary's Industrial Group (SMIG), an association of large landowners, circulated this poster.

Impassioned rhetoric came from both sides in 1979-80. The landowners bought 30-second television spots in the winter of 1978-79, to oppose the FWS proposal. The Louisiana NAACP, Louisiana AFL-CIO, League of Women Voters, Louisiana Wildlife Biologists Association, Louisiana Bass Clubs, and the organized commercial fishermen of Louisiana supported the proposal. Despite Houck's reservations about the FWS tactics, almost all environmental organizations also offered support, including the Louisiana Wildlife Federation. Newspapers were generally sympathetic. The *New Orleans*

Times-Picayune, *Lafayette Daily Advertiser*, and *Alexandria Town Talk* came out in favor of public acquisition. Sanders and others held press conferences in Baton Rouge, and the environmentalists also took a well-publicized trip to Washington in late 1979 to talk to Department of Interior officials and the Louisiana congressional delegation.⁵⁹

Throughout 1979, the FWS attempted to develop a strategy to optimize its chances of success. This involved reaching out to senior-level officials in the Department of the Interior, other agencies, federal and state politicians, and to opponents within the state. To those who wondered whether comprehensive easements might be a better approach, the FWS argued that the administration of such easements would be impractical, if not impossible. In response to petroleum industry concerns over public acquisition, FWS personnel began a series of meetings with representatives of the Mid-Continent Oil and Gas Association (which did not include the smaller, independent oil and gas producers) in March 1979. After several months of negotiations, the participants agreed on a policy document entitled "Oil and Gas Activities in the Atchafalaya Fish, Wildlife, and Multi-Use Area" in which the FWS guaranteed that the industry could operate effectively in the basin.⁶⁰ Finally, reacting to Colonel Sands' observation in a mid-November 1979 meeting in Washington that relations between the Corps and the FWS had deteriorated, Director Greenwalt said that, henceforth, the FWS would be a "team player," although it reserved the right to disagree. However, mutual suspicions continued, and relations between the FWS field office in Lafayette and the Corps office in New Orleans remained chilly.⁶¹

Meanwhile, the Fish and Wildlife Service attempted to alleviate the concerns of members of the Louisiana congressional delegation. Republican Representative W. Henson Moore was especially outraged by the FWS proposal and subsequent activities to garner additional support. He accused the FWS of having "its own intention separate and apart from the effort of AMG [agency management group]." He also believed that the FWS had not been candid about the importance of flood control in planning the basin's future and that the agency had misled Louisianans by implying that their elected congressional representatives could somehow obtain funds under the 1935 Refuge Revenue Sharing Act (applied to national wildlife refuges) without full congressional approval. The congressman believed that the FWS had misled Louisianans in other areas as well.⁶²

The Lafayette field office drafted a response to Moore's letter which went through several levels of review before arriving on Greenwalt's desk a month later. Despite the scrutiny the document had

already received, Greenwalt had reservations. He wanted some sentences modified or eliminated that he feared would be construed as snide or gratuitous. He also questioned the wisdom of raising the issue of revenue sharing under the Refuge Revenue Sharing Act because of its potential impact on the FWS budget and the possibility that it might serve as a precedent to be applied to other locations, especially to the resource-rich lands of Alaska. Greenwalt fretted, "I am once again cast in the role of the 'bad guy' who tends to blunt the spear point of the field troops and the like—not being aggressive enough and the rest. I do not intend to be, as you know, but I am also concerned that we do not antagonize a congressman who can be dealt with without being irritated."⁶³ Revised still further, Greenwalt's letter—a strong defense of the public acquisition proposal—finally went out to Moore on 21 May.⁶⁴

Fish and Wildlife Service efforts to obtain increased support from senior officials in the Department of the Interior primarily focused on Undersecretary of the Interior James A. Joseph, a native of Opelousas, Louisiana, and graduate of Southern University. Joseph came to Lafayette at the beginning of April and was impressed with the briefing the field office staff presented. He wanted to know how higher levels within the department could contribute to the effort, and the Lafayette office thereupon began to work on a strategy paper.⁶⁵ The result reached Joseph at the end of May. Greenwalt explained that the delay had been caused by "some new signals" on the timing of the Atchafalaya project.⁶⁶ He thought the Corps was procrastinating, partly because it felt the pressure building "for a plan they may not want to support." Greenwalt believed it important "to keep the issue alive" and wanted Congress to consider the proposal the next year "while the climate is possibly more positive than in future years." The key was to get the administration behind the project by late summer or early fall.⁶⁷

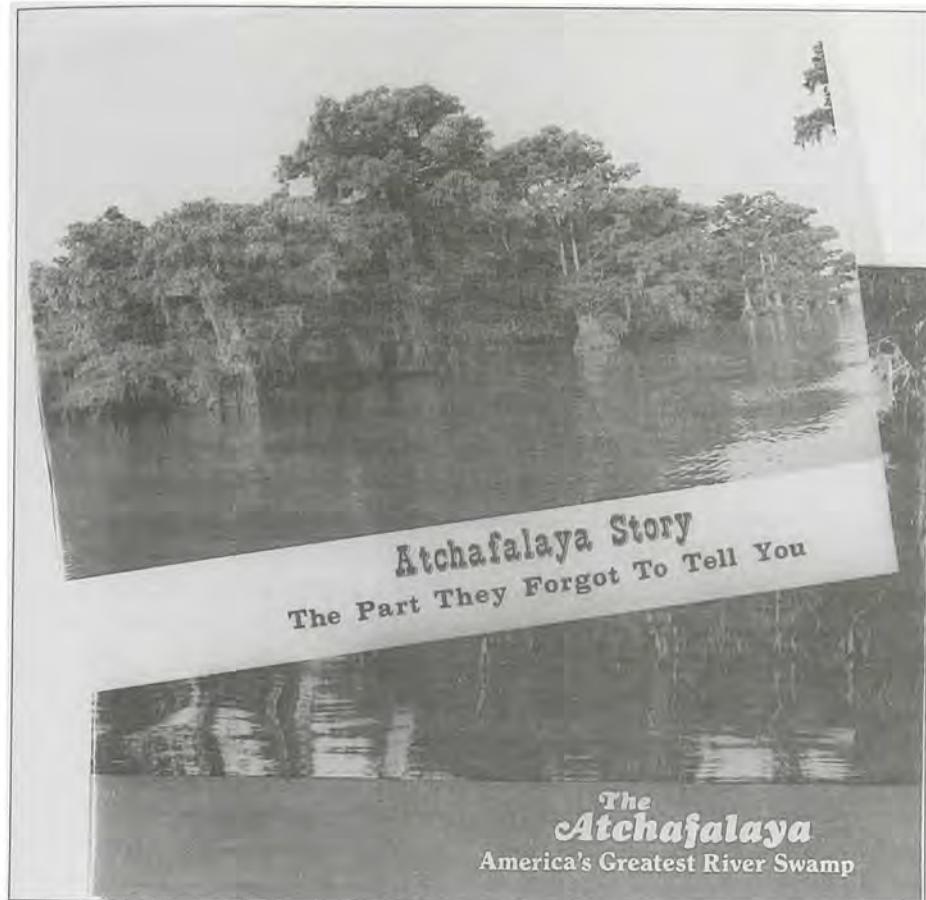
Step one of the revised strategy was to address various technical issues—reaching agreement with the oil and gas industry, determining a method of replacing ad valorem tax losses, and determining the potential for Clean Air Act restrictions to limit the development of the perimeter of the basin. Step two required the department, at the secretarial level, to "develop and announce a clear position indicating unequivocal support for the objectives to be achieved...." Other steps included the department sponsoring a meeting of national and local conservation agencies in Washington, Secretary Cecil Andrus meeting with Governor Edwards, and Undersecretary Joseph or Assistant Secretary Herbst traveling to Louisiana to meet opponents and

proponents of the FWS plan. Greenwalt made several significant points regarding the strategy:

1. Protection of the Atchafalaya Basin may be (hopefully will be) *the* next big land issue following on the heels of Redwoods and Alaska.
2. Unlike the previous two issues there is no clear position of the environment/conservation community on *how* to preserve the Basin. Fee acquisition is not accepted by all groups.
3. There is no viable "do nothing" alternative. Because of man's changes in the Lower Mississippi system a major public works project (at least \$750 million) is required to preserve the existing fish and wildlife values as well as provide flood control.
4. Something must be done soon. The integrity of the Basin *will be* rapidly deteriorating within ten years if positive action is not taken.⁶⁸

Generally, the department took Greenwalt's advice. Joseph flew to Louisiana in November and energetically defended the FWS proposal before the Lafayette Chamber of Commerce. He also helped persuade the oil and gas people to accept the FWS proposals that had been negotiated during the previous months, and he reiterated that the FWS plan would not interfere with oil and gas production. He threw his full support behind the local FWS staff when they were attacked by landowners' representatives, and he favorably impressed Colonel Sands, whom he met in the New Orleans District office. In sum, his visit raised the morale of the Lafayette field office staff and enhanced the credibility of the FWS proposal.⁶⁹ Those who had thought that the FWS proposal did not enjoy departmental backing had their misperceptions corrected.

However, nothing the FWS did lessened the opposition of the landowners. In February 1980, they published their rebuttal to the Fish and Wildlife Service proposal. The pamphlet, *Atchafalaya Story: The Part They Forgot To Tell You*, was approximately the same size as the Fish and Wildlife Service document. It portrayed the public acquisition proposal as an attack on property rights and free enterprise.⁷⁰ The conflict between the landowners and the FWS could not have been more clearly drawn, nor was the situation without irony. Historically, landowner and environmental opposition to the Corps often had merged. Farmers had fought the Corps from New England to California



Competing visions.

Top: the landowners' position. *Bottom:* the U.S. Fish and Wildlife Service's proposal.

to prevent the sacrifice of rich agricultural land for the construction of dams and reservoirs, while environmentalists questioned the economic benefits of many reservoirs and feared the degradation of the ecosystem. In the background was the FWS, which generally supported the environmental community. This time, however, the former allies were on opposite sides, an obvious result of a plan that denied most private land development and constrained future growth. In consequence, the FWS, replacing the Corps, suffered landowner displeasure, and the agency may not have been prepared for the extent of outrage. It was a bureaucratic rite of passage for the FWS. A young and inexperienced agency with far less political support than the Corps, the FWS had sought the Corps' respect but had often felt patronized. Now it broke free, determined to march to its own drum, preach to the unconverted, and assume leadership in the environmental community, at least in Louisiana.

Environmental Issues, Old and New

WHILE THE CONTROVERSY over the Atchafalaya Basin's future ownership remained the key question facing government bureaucrats, experts of all stripes, and the general public, other related issues also galvanized opinion and proved nearly as contentious.

One ever-vexing challenge was managing the huge amounts of sediment that settled in the Atchafalaya Basin. The problem joined environmental, navigation, and flood control concerns. Corps plans called for 1.5 million cfs to pour through the Atchafalaya Basin during a project flood. Yet the 869,000 cfs of water which flowed through the basin at the height of the 1973 flood threatened the guide walls along the lower floodway and the floodwall at Morgan City. The basin "bathtub" had nowhere near the capacity thought necessary.⁷¹ The agreement with the National Wildlife Federation prevented the Corps from completing its 100,000-square-foot center channel, and levees were still below grade along stretches of the lower floodway because of sinking foundations. Somehow, room had to be found for more than 600,000 cfs of floodwater, but time was not on the Corps' side. The sediment deposited in the basin raised the elevations of flow lines from year to year. An intrepid swamper blazing a direct path leading from Charenton on the western edge of the basin to Bayou Pigeon on the eastern edge would have trekked over as much as 15 feet of silt accumulated since just 1917. The Corps was understandably anxious.⁷²

In every solution, the operation of the Old River Control Structure played a major role. Any operational changes (including those for the planned auxiliary control structure) would affect the discharge downstream on the Atchafalaya River and, consequently, the characteristics of the future channel and the deltaic growth occurring at the river's mouth in Atchafalaya Bay. For those reasons, the engineers were wary of tinkering with the system. Yet, both environmental and economic arguments favored changing the operation of the control structure. Farmers in the Red River backwater area wanted the flow into the Atchafalaya River reduced during May, June, and July in some years. That would lessen the amount of water on the land during crop planting. On the other hand, the FWS wished to increase flows during the same months in drier years to benefit downstream fishery interests. The EPA also desired to increase the diversion, but for purely environmental reasons—to maintain the aquatic nature of the Atchafalaya ecosystem.⁷³

By early 1979, the Corps was considering ten different plans to operate the control structure. One plan considered a 40 percent

diversion down the Atchafalaya River. The other plans maintained the 70–30 percent split but provided for the control structure to be operated in different ways to reduce flooding in the Red River backwater area. Some options would have resulted in environmental degradation, and several would have required the construction of additional flood control structures.⁷⁴ In the end, the Corps of Engineers resisted all suggestions for significant modifications but kept open the possibility that some short-term changes might be made periodically. Allowing more water through the structure risked exactly what the Corps rested its reputation on preventing—letting the Mississippi establish a new channel through the Atchafalaya Basin—while diminishing the water would exacerbate the sedimentation problem. Their investigations convinced the engineers that they had hit on the best overall plan. The 70–30 split at Old River let the Atchafalaya increase its own carrying capacity, and by mid-1979 Colonel Sands had decided that dredging a large new channel for the Atchafalaya was no longer necessary; the Atchafalaya's main channel was “dredging itself out.”⁷⁵ Moreover, new Corps engineering and environmental studies indicated that dredging a 100,000-square-foot center channel would adversely affect more than 20,000 acres of woodlands and wetlands, thus confirming some of the fears first expressed by the environmentalists.⁷⁶

Sands' decision eliminated the issue which had been a flashpoint ever since it was first formally advanced in 1963, and that had led to the involvement of the National Wildlife Federation and other private and public agencies in the EIS process. However, the new approach hardly diminished the involvement of various organizations in the Corps' EIS efforts. By 1979, the Atchafalaya planning process had a life of its own. New issues had arisen and the basin had become a rallying point for environmentalists around the country. The public-private involvement continued.

In its final feasibility study⁷⁷ and EIS of 1982, the Corps modestly recommended dredging 29 million cubic yards of material from only 17.6 miles of the Atchafalaya's main channel between river miles 116 and 90 (mainly in the Grand and Six Mile Lake area) to help the river enlarge itself—the Corps called it “channel training”—and continuing to divert 30 percent of the combined flow of the Mississippi and Red rivers at the latitude of Old River into the Atchafalaya River.⁷⁸ The Fish and Wildlife Service acquiesced to this decision, although the agency expressed the hope that flows could be increased at selected times to prevent degradation of the fish habitat.⁷⁹ The Environmental Protection Agency also eventually supported the Corps' Old River decision but pushed even more energetically for the creation of its pet project—the

management units—to control the spread of sediment within the basin. Not only would water quality improve, EPA insisted, but the approach also promised to improve crawfish production and bring more fur-bearing animals to the lower basin.⁸⁰

Despite EPA's enthusiasm, the effectiveness of management units was another intensely debated environmental issue. The Corps of Engineers believed that EPA claimed too much. Even the environmental planners in the Corps were dubious. They did not believe that the management units could work in the southern (lower) part of the basin at all and were unconvinced about several other units. "We sat around a room at various times and argued and yelled and screamed at each other, but it was all biologists," recalled Suzanne Hawes, who was chief of the environmental branch in the New Orleans District.⁸¹

Discussions of management units, heated or not, continued into 1981, with the Corps almost invariably taking a more conservative approach. Issues included the effectiveness of sediment traps, the realignment of distributary channels, and, as always, the design of the hydrographs.⁸² Gas and oil interests also expressed concern that the units would interfere with their operations.⁸³ Whenever the Corps suggested eliminating some management units from further consideration, EPA authorities objected. One EPA letter protested the "unilateral" nature of the Corps' decisions and observed, "We look forward to discussing the restoration of the full complement of management units with you."⁸⁴ Finally, reflecting much debate and compromise, the management units themselves were modified before they were listed in the Corps of Engineers' 1982 feasibility study and EIS. Bayou Fordoché had been renamed Henderson Lake, and two small units, Lost Lake and Cow Island Lake, were identified in the zone separating Henderson Lake from Warner Lake. Both the West Atchafalaya and Morganza units were dropped and The Crevasse and Upper Belle River were consolidated. The result was the following list:⁸⁵

West of the Atchafalaya River	East of the Atchafalaya River
Henderson Lake	Alabama Bayou
Warner Lake	Bayou des Glaises
Lost Lake	Pigeon Bay
Cow Island Lake	Flat Lake
Cocodrie Swamp	Upper Belle River
Beau Bayou	
Buffalo Cove	
Six Mile Lake	

Of the 13 management units, the Corps determined that five—Buffalo Cove, Henderson, Beau Bayou, Flat Lake, and Cocodrie Swamp—had the best chances of success. In the feasibility study, the Corps recommended that Buffalo Cove and Henderson Lake be used as pilot units, to be developed and closely monitored by the Corps in conjunction with the FWS, EPA, and appropriate state agencies.⁸⁶

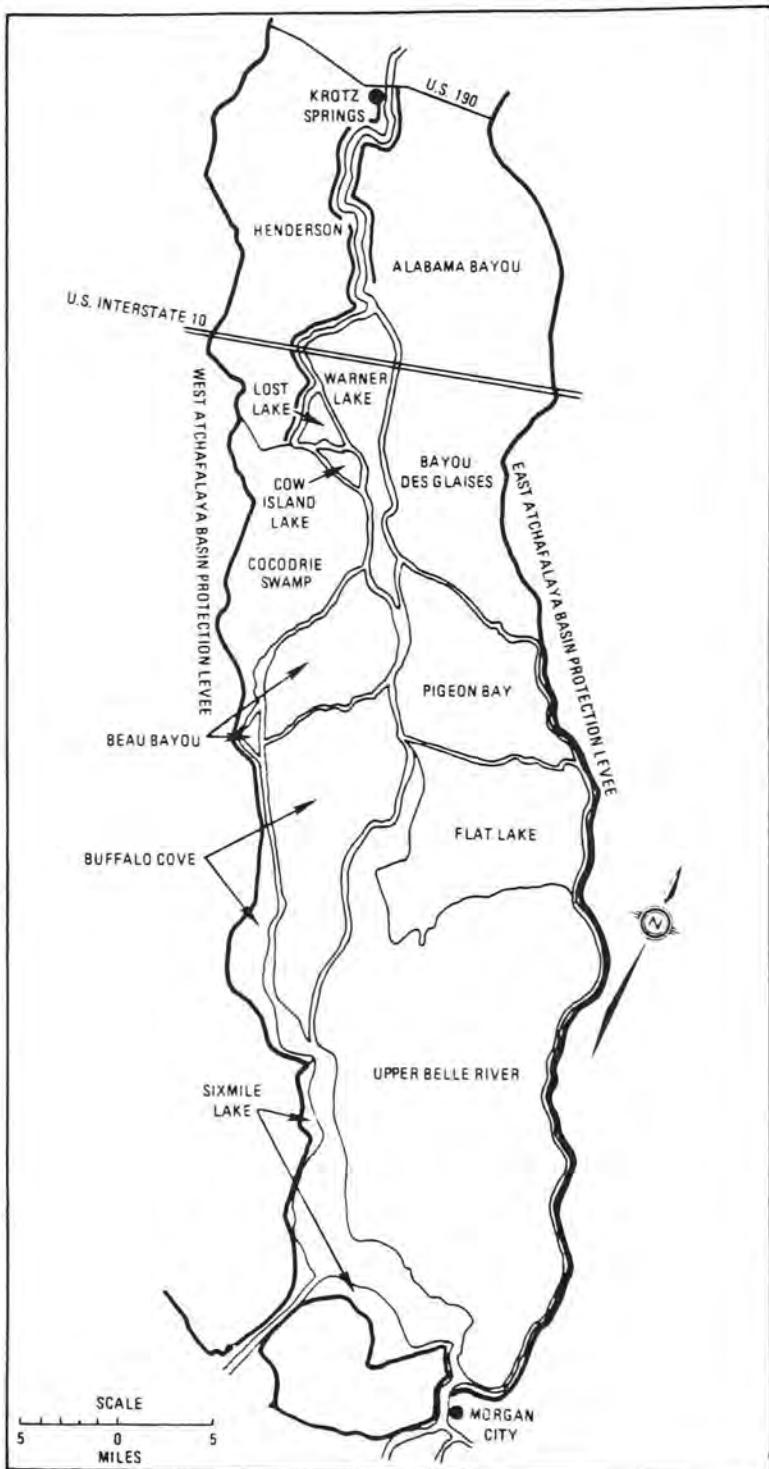
The debate over the management units epitomizes one of the poignant ironies of the Atchafalaya Basin. The basin had long ago lost its claim to be an entirely natural ecosystem; for two centuries humans had exploited its resources and channeled its waters. Flood control activities had transformed the topography, altered flora and fauna, and had left little in the basin untouched. Yet, the Environmental Protection Agency, in its desire to restore the basin's natural rhythms, advanced a plan that would subject the region to a degree of human management previously unknown.

Another controversy raged over the extension of the Avoca Island Levee (see map on page 237). The Corps had completed the original levee in 1953 to control backwater flooding south and east of Morgan City in the marshlands of Terrebonne Parish. The levee extended from Bayou Boeuf just below Morgan City southward to a point just above Cutoff Bayou. While the structure initially lowered backwater flooding, its effect was partially offset by the delta building at the mouth of the Atchafalaya and the general deterioration of the lower part of the river.

To overcome the problem, the Corps proposed incrementally extending the levee 16 miles or more to the south depending on the exact route chosen—designated as bay shore, channel, or marsh. All three routes were divided into six reaches to be built at approximate ten-year intervals. The channel and marsh routes extended directly into Atchafalaya Bay, while the bay shore route adhered more closely to the shoreline.⁸⁷

However, opponents blasted the project. They pointed to numerous adverse environmental and economic impacts, and they challenged the project's overall cost-effectiveness. Environmental agencies demanded new and often expensive scientific studies to detail the project's probable impact, while engineers insisted that more studies were unnecessary. At both the state and federal levels, the debate opened a chasm between engineering and environmental agencies.

The Fish and Wildlife Service listed numerous adverse consequences of the Avoca Island Levee extension. The extension would cut off freshwater flows from the Atchafalaya River into the western Terrebonne Parish marshes, destroying productive marsh habitat. As a consequence, the nursery grounds for shrimp, crab, and fish would deteriorate or be eliminated. Nutria and muskrat populations would



Final concept of management units in the Atchafalaya Basin.

harm the commercial trapping industry. Further negative effects included a degradation in delta development, the acceleration of saltwater intrusion, the deterioration or destruction of a natural hurricane buffer zone, more conversion of marshland into farmland, and more development in flood prone areas.⁸⁸

The FWS's state counterpart, the Louisiana Department of Wildlife and Fisheries, generally supported the findings of the federal agency (except for differences over federal land acquisition in the basin). A similar alliance occurred on the developmental side. The state Office of Public Works supported the Corps' position that if the extension were not constructed, Morgan City and the surrounding area would suffer economic consequences. While many Atchafalaya-related issues divided the environmental and developmental agencies, probably none brought the differences into higher relief than the controversy over the Avoca Island Levee.



Morgan City, Louisiana, during the 1983 high water. Avoca Island is in the upper left.

Differences over the levee extension festered for some time, but the dispute intensified in the summer of 1979 when the Louisiana Department of Transportation and Development (DOTD), which embraced the Office of Public Works, ran into strong opposition from both the state and federal wildlife agencies. At a meeting of the Atchafalaya Basin Agency Management Group at the end of May, a DOTD representative expressed his agency's support for the extension, but his rationale, in the words of a Fish and Wildlife official, "was not

apparent" and in fact conflicted with several revised guidelines in the state's coastal resources program.⁸⁹ The Office of Public Works responded that the FWS did not appreciate economic, cultural, social, or safety concerns. However, J. Burton Angelle, secretary of the Louisiana Department of Wildlife and Fisheries, jumped into the dispute with a letter suggesting that the Office of Public Works did not understand the more limited role of the FWS—to protect, preserve, and enhance fish and wildlife resources. Angelle also noted, "It has not been demonstrated that significant adverse economic impacts will result if the Avoca Island Levee extension is not constructed."⁹⁰

Environmental organizations opted for a system of 28 ring levees around populated areas instead of the Avoca Island Levee extension. The Environmental Protection Agency, Fish and Wildlife Service, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Louisiana Department of Wildlife and Fisheries, and various fishery organizations supported this approach.⁹¹ While the Corps admitted that this plan would completely protect areas within the ring levees, the agency expressed concern that the approach left unprotected most of the land subject to backwater flooding. The Corps concluded that the proposal would require the relocation of 1,900 residential, commercial, and public structures.⁹²

The debate over the cost-effectiveness and necessity of the levee extension continued, as did numerous scientific studies to gather more information about the project's impact on the ecosystem. In particular, the FWS complained about a lack of hydrologic data. That agency was frustrated because Colonel Sands had by 1980 indicated that he supported construction of the first reach (about 14,000 feet) of the extension along the bay shore route, which was the least environmentally damaging of the three routes. Although the FWS had by its own account inadequate information, the agency observed that this construction would result in two major adverse impacts. First, it would result in approximately 84,000 acres of wooded wetlands north of the Intracoastal Waterway becoming sufficiently dry to be converted to other land uses. Second, it would mean greater saltwater intrusion.⁹³ As the FWS admitted, these problems could be mitigated through the erection of various control structures or through land easements or acquisitions. When the Corps appeared intent on recommending the levee extension despite environmental objections, the FWS modified its strategy to emphasize mitigation features rather than the complete elimination of the project. Sands was responsive; indeed, the Corps was working on some of the same solutions. He noted in early 1981 that the Corps would ensure that the project would not affect "existing

salinity and sediment distribution patterns in the western Terrebonne Parish marshes.”⁹⁴ Yet, the Corps, too, had insufficient data to assess the project’s precise impacts.

In June 1981, the Corps published a new five-volume draft feasibility report and environmental impact statement on the Atchafalaya Basin floodway system (a preliminary draft had been circulated for agency review in March 1981). This report responded to Secretary Veysey’s decision five years earlier to combine the engineering and environmental features into one plan, and it replaced the earlier DEIS of 1976. As Colonel Sands had earlier hinted, in the report’s “tentatively selected plan” (TSP), the Corps recommended the construction of the first reach of the Avoca Island Levee extension.⁹⁵ Once more, the Corps held five public review meetings around the state, and again the agency received ridicule and scorn but also strong support. In Morgan City, residents of Terrebonne Parish applauded every criticism of the Corps. “The Corps of Engineers is apparently the executor of the curse on Terrebonne Parish,” parish resident and state legislator Murray Hebert said. “You’ve been attempting for years to do away with us, and this seems like the final blow.” Warming up, Hebert continued, “Thanks to the Corps’ work Terrebonne Parish is an endangered species.... I know they’re [sic] brighter minds with brighter plans.”⁹⁶ At the meeting, oystermen also complained that the extension would alter salinity, destroying oyster grounds.

The Corps admitted in the TSP that it had inadequate information about the effect of the Avoca Island Levee extension on natural resources and that more studies were necessary. While the Corps’ figures did not come close to the 84,000 acres that the FWS tentatively estimated, the TSP conceded that thousands of acres of marshland would be lost because of the impact of construction, the reduction of river overflow, and the isolation of newly developed delta—some 3,200 acres—which would eventually return to the bay.⁹⁷ The FWS vehemently denied a Corps suggestion in the TSP that the controversy surrounding the construction of the levee extension had been resolved. “This could not be farther from the truth,” responded David Soileau, acting field supervisor in the Lafayette office, who once more advanced the ring levee option.⁹⁸ He observed that the levee extension would “protect residents and property in the area immediately north and east of Morgan City from only *backwater flooding problems* caused by the Atchafalaya River.” However, he went on, such flooding accounted for only half of the flooding problems in the area. The rest came from tidal and headwater flooding, neither of which would be lessened by the Avoca Island Levee extension.



ANNOUNCEMENT OF PUBLIC MEETINGS

LMNPD-C

16 JUNE 1981

To discuss the 'Tentatively Selected Plan' for the
ATCHAFALAYA BASIN
 developed by the

U. S. Army Corps of Engineers, New Orleans District
 with the participation of:

State of Louisiana

U. S. Department of the Interior

U. S. Environmental Protection Agency

MEETINGS WILL BE HELD ON:

TUESDAY, JULY 14, 1981 1:00 PM

Louisiana State University Union Theater
 LSU Campus
 Corner Raphael Semmes and Highland Streets
 Baton Rouge, Louisiana



THURSDAY, JULY 16, 1981 1:00 PM

Morgan City Civic Auditorium
 U.S. Highway 90
 Morgan City, Louisiana

SATURDAY, JULY 18, 1981 9:30 AM

Angelle Hall Auditorium
 University of Southwestern Louisiana
 Corner of St. Mary and McKinley Streets
 Lafayette, Louisiana

MONDAY, JULY 20, 1981 6:00 PM

Block High School Cafeteria
 300 Division Street
 Jonesville, Louisiana

WEDNESDAY, JULY 22, 1981 9:30 AM

The Rivergate
 #4 Canal Street
 New Orleans, Louisiana

Announcement of public meetings to discuss the tentatively selected plan.

On the other hand, the ring levees would give 100 percent flood protection.⁹⁹ In its formal report dealing with the Avoca Island Levee extension, the FWS also correctly noted that the "Limited Structural Measures"—the ring levees—would comply with President Jimmy Carter's 1978 executive orders dealing with floodplain management

and the protection of wetlands.¹⁰⁰ The state Department of Wildlife and Fisheries sided with the FWS completely: "In our view the extension of the Avoca Island Levee would cause an unacceptable amount of environmental damage while failing to provide adequate protection from flooding to the residents of the backwater area.... Ring levees remain a much superior flood control and environmental alternative and are more cost-effective."¹⁰¹

The intensity of the opposition to the Avoca Island Levee extension surprised the Corps, and Colonel Sands attempted to be sensitive to both environmental and engineering concerns. While the final feasibility study and environmental impact statement of January 1982 argued that only an extension of the Avoca Island Levee would "provide protection over the entire area of backwater influence east of the floodway," it did not specify the length the extension should be. Instead, the Corps admitted that more biological and engineering studies—to be completed by 1985—were necessary before the exact length could be determined.¹⁰² What Sands had not anticipated was that the seven-man Mississippi River Commission, pressured by an enormous letter-writing campaign by Morgan City interests, would overrule him on the subject and in April 1982 would recommend the immediate extension of the Avoca Island Levee.¹⁰³ This story and its aftermath is part of the final chapter of this history.

The controversies surrounding the Atchafalaya Basin in the 1970s partially resulted from new planning procedures more congenial to the environmental era, procedures which emphasized constraints rather than development. They limited use in order to preserve the ecosystem, but they could not always reconcile all the conflicting purposes and problems involved in the project. An even more daunting task was to agree on priorities. As the story of the Atchafalaya Basin shows, if planners cannot agree about the relative importance of *all* project purposes, the appropriate application of technical and nontechnical data, and acceptable environmental impacts, confusion and acrimony are almost guaranteed. Even if all parties do initially agree, they need to be prepared for subsequent modifications; new objectives—and objections—continuously emerge. By the end of the 1970s, awareness that science and engineering could not solve essentially social and economic questions was growing. These were political matters that required political negotiation.

Chapter II

Denouement?

DESPITE ITS BEST EFFORTS, the Corps floundered when it attempted to forge a consensus on the future of the Atchafalaya Basin. Many people continued to doubt the agency's environmental sensitivity, while others saw the Corps sacrificing its commitment to a critical flood control project. At times developing agreements on even the most routine matters seemed beyond reach. However, other participants in the agency management group probably would have done no better, and some with narrower interests and concerns than those the Corps represented surely would have done worse. Houck and Trowbridge continued to negotiate, but the groups they represented, environmentalists and landowners, were hardly homogenous. Members of each group agreed on some broad philosophical issues—environmentalists touted public ownership while landowners upheld the sanctity of private land—but dissension often occurred. Colonel Sands stimulated discussions and urged the ABAMG to reach agreement, but his official position prevented him from being too outspoken. In short, although studies and data gathering proceeded, substantial differences still existed among the ABAMG representatives and other interested parties.

After David C. Treen became governor in early 1980, the first Republican governor in Louisiana since Reconstruction, Colonel Sands and various environmental leaders encouraged his involvement in preparing the Corps' comprehensive report. Until then, the governor's role had been minimal, but Treen was thought to be sympathetic with some of the environmental issues in the basin, while his Republican credentials could help build links with some of the large landowners.¹

As a congressman in early 1977, Treen had already shown interest in Atchafalaya problems when he had offered his assistance to Colonel Rush to complete "this very important project."² The residents of Acadiana reciprocated in 1979. In a very tight and extraordinarily expensive election race, which Treen won by only 9,000 votes, he received his strongest support from the suburban parishes around New Orleans and the parishes covering the Atchafalaya Basin.³ Once elected, Treen told Kai Midboe, his energetic executive assistant for federal and environmental affairs, to get the Atchafalaya issue settled. Midboe met

with representatives of the ABAMG, and, at Governor Treen's direction, organized the State Agency Work Group to develop a state position on the future of the basin. The group included the Office of Public Works, Department of Natural Resources, Department of Wildlife and Fisheries, and Department of Culture, Recreation and Tourism.⁴ Increasingly, the governor's office became the site for meetings on the Atchafalaya. However, environmental issues did not dominate the discussions. Rather, the participants grappled with an old but still nettling problem: real estate.

Real Estate Problems Again

SINCE EARLY 1979, HOUCK AND TROWBRIDGE had been exchanging letters, holding meetings, and seeking compromise, especially on the public acquisition issue. In ways, it was an unlikely team. Few in the environmental community trusted Trowbridge, and Houck realized that he was "taking a considerable risk by dealing with the guy because if he screwed me I'd lose all the way around."⁵ For his part, Trowbridge understood that he needed Houck as a conduit to environmental groups. Colonel Sands also participated in numerous discussions. Although Trowbridge and Houck had very definite and different ideas about an acceptable resolution, they agreed that any solution depended on opening up direct lines of communication between the environmentalists and landowners.⁶

Houck also pressed Colonel Sands to develop a Corps plan that embraced comprehensive easements in perpetuity. Indeed, he thought that an acceptable plan must have the Corps imprimatur and must be presented as a flood control plan, rather than as a proposal to enhance fish and wildlife. If the state agencies accepted this approach, then he thought the landowners would too. Houck maintained that any attempt by the Corps to use its 1972 Clean Water Act (Section 404) permit authority to manage the basin would fail because of the enormous pressures to develop the region. The EPA agreed with Houck, citing its and the Corps' inability to prohibit refining operations within the basin. Houck encouraged public acquisition of land from willing sellers and with some justification believed any proposal relying on government condemnation would fail.⁷

Despite opposition from the Fish and Wildlife Service, which refused to give up the idea of fee acquisition by condemnation—and found substantial support from the environmental community for its position—Houck and Trowbridge moved the focus of real estate

planning efforts from condemnation to acquisition of easements and purchase in fee simple from willing sellers. Even some supporters of condemnation realized that in the end compromise was necessary—generally, the Louisiana congressional delegation did not favor condemnation. Instead, comprehensive easements would probably be the most politically acceptable approach.⁸ Colonel Sands, Houck, and Trowbridge began developing an elaborate set of easement options, allowing for various levels of public access and various amounts of landowner control. The exercise was designed to eliminate the requirement for actual government ownership of the land, allow for operation of the flood control system, and yet keep the basin as “wet and wild” as possible. Landowners would still own property, but the Corps would control water flow and distribution.

Colonel Sands introduced the easement options to the agency management group in April 1980, and discussions continued into the following months. On 22 August, the Corps presented to the ABAMG a compromise real estate plan that had been developed by New Orleans District personnel. The plan included a developmental easement (to prohibit or limit further development of the property) over most of the privately owned lands in the floodway; comprehensive easements that would allow public access to approximately 106 miles of a greenbelt which would be developed along various streams, and additional easements to provide for public access to various levees. The Corps also recommended purchasing in fee simple approximately 20,000 acres of bottomland hardwoods to support public hunting. Furthermore, the government would purchase 10,000 acres of cypress-tupelo swamp to be preserved as a unique natural area, 2,000 acres for rookeries, and 1,000 acres for recreation. In all cases, however, the original landowner would retain mineral rights.⁹

On 6 October, the EPA and FWS presented their alternative proposals. In general, their approach was more specific, targeting precise patches of land for specific types of easements. The EPA wanted to obtain comprehensive flowage easements (called A-7 easements) over the entire basin; landowners still could own timber and practice silviculture, exploit minerals, and control public access. EPA also desired easements over agricultural lands, and the right to manipulate water levels (management units). Furthermore, EPA desired A-2 easements, providing government control except for mineral and certain timber rights, over approximately 100,000 acres of state lands, 50,000 acres of bottomland hardwoods, and about 100,000 acres of cypress-tupelo swamps. Finally, the agency stipulated public access for boating and fishing, and greenbelts along levees and significant

waterways. The FWS wished to have the government purchase a minimum of 50,000 acres and to obtain an A-3 easement over the 101,000 acres of bottomland hardwoods below I-10; this flowage easement would allow landowners to retain mineral rights and control public access. In general, the FWS and EPA proposals were similar. The Corps was inclined to favor an A-7 easement for all the bottomland hardwoods lying below I-10 except for the 20,000 acres to be purchased for hunting, but was still studying various options.¹⁰

Drawing on many of the ideas that had come out of the ABAMG, the State Agency Work Group had meanwhile developed a state position—the Louisiana Land Use Proposal—which Governor Treen sent to Colonel Sands on 5 November and formally announced the following day. Treen proposed that the public be granted access to about 105,000 acres of private lands through an assortment of easements to be purchased at federal expense: 1,500 acres for campsite areas (A-1 easement); 73,500 acres, including 23,000 acres set aside for greenbelts (A-2 easement); and 30,000 acres for an A-6 easement. The A-2 and A-6 easements would largely be over cypress-tupelo and bottomland hardwood stands. Since the state already owned about 150,000 acres of land in the basin, the public would enjoy access to a total of 255,000 acres of land, approximately 43 percent of the acreage within the floodway system. Treen also recommended that a comprehensive A-7 easement be acquired over the entire basin except for developed ridges and state-owned property. The easement would allow owners to retain mineral rights, but they could not convert the land to agricultural use, and the government would have the right to flood the land.¹¹ By mid-November, all the agencies in the ABAMG came out in support of the governor's real estate proposals.¹²

Treen's willingness to commit state resources and his own influence to solving the volatile Atchafalaya issue was admirable; but this proposal was a political mistake despite ABAMG support, for it outraged hunting clubs and landowners, especially the parts dealing with public access and greenbelts. Some greenbelts would be strips of land, 300 feet wide, bordering public navigable waterways. Others would be strips of land, up to a quarter-mile wide, adjacent to the basin guide levees. Landowners were permitted to cross the greenbelts to exploit mineral and timber rights on their adjacent lands and build personal camps in greenbelt areas, but they correctly believed that the full use of their best land would be denied them. The restrictive easements (A-1 and A-2) on about 75,000 acres of land particularly upset them.¹³ Their protests were loud, prolonged, and effective.

The governor's proposal shocked Houck and Trowbridge. The two lawyers had been working on a proposal that would have allowed public access to between 30,000 and 60,000 acres of private land and an additional 15,000 to 20,000 acres of greenbelts. They believed they were on the verge of an agreement and had asked the governor not to announce a plan that undermined their negotiations or seemed to favor one side over another.¹⁴ However, their concerns evidently made little impression. Treen's plan obviously favored the environmentalists; yet it had no chance of success since it so alienated the landowners. In short, the governor's plan made compromise more difficult. Houck had to convince environmentalists to settle for something less than the governor offered, while Trowbridge needed to calm the landowners.

Trowbridge began meeting with F. William Miller, Hugh C. Brown, and Henry Fielding Lewis, three landowner representatives whom he thought discreet and trustworthy, to develop a more palatable plan. He also continued discussions with Houck.¹⁵ The result was what the Louisiana Landowners Association called the "Realistic Plan" when the organization publicized it in mid-June 1981. Rather than restrictive easements on 75,000 acres, the landowners decided that between 80,000 and 90,000 acres of land should either be donated or sold to the state at a total cost of about \$55 million. They agreed to restrictive multipurpose easements for flood control and environmental protection within the basin as proposed in the Corps' tentatively selected plan (TSP). An A-7 easement would prevent timberland within the basin from being converted to farmland, a major concession. The idea that land might actually be donated to the state certainly enjoyed a wide appeal, and many thought the proposal a giant step forward.¹⁶

Trowbridge was able to identify landowners willing to sell about 50,000 acres of land, but that amount fell short of the landowners' announced objective and far short of the environmentalists' desire to obtain around 100,000 acres for public access. While Trowbridge may have been able to identify a few more "willing sellers," his job became much easier as a result of an offer from the Dow Chemical Company. The company had extensive holdings in and around the basin but did not need the surface rights. Knowing that transferring these surface rights to the state government might break apparently deadlocked negotiations, Dow representatives in Louisiana saw an opportunity for a public relations coup. Throughout the summer of 1981, stories spread about a possible donation of land from Dow—which explains the mention of "donation" in the landowner plan. In fact, the stories were more than rumors. In negotiations with Kai Midboe, Dow representatives offered the state some 40,000 to 50,000 acres of land,

of which 30,000 acres were in the floodway proper. Dow would retain the all-important mineral rights. The discussions no longer focused on 50,000 or 80,000 acres of land to be put into state hands, but on close to 100,000 acres.¹⁷

Meanwhile, the greenbelt concept rapidly lost much of its remaining support. Landowners met with Midboe to persuade him of the proposal's impracticality. At the Indian Bayou Hunting Club in the Atchafalaya Basin, Midboe explored the proximity between a proposed greenbelt and the grounds of the hunting club, and he concluded that the landowners had a valid objection: it was impossible to ensure public safety on the greenbelts during hunting season. Midboe advised Governor Treen to drop the greenbelt concept, and Treen agreed to look at other options.¹⁸

An agreement was gradually taking shape. After the public meetings on the TSP were over, landowners, Corps officials, fish and wildlife representatives (both state and federal), and environmental groups continued to negotiate. Deliberations continued in the ABAMG, but scores of discussions occurred throughout the state as well, and Houck and Trowbridge continued to concentrate on developing workable easement options. Reluctantly, environmentalists agreed to the elimination of the greenbelts. In return, landowners tightened the comprehensive A-7 easement to prevent any conversion of land to agricultural or other uses.¹⁹

On 19 November 1981, Governor Treen announced a modified version of his earlier proposal, which included many facets of the landowners' plan, environmental compromises, and the results of Midboe's successful negotiations with Dow Chemical Company. In exchange for donating to the state between 40,000 and 50,000 acres of land, the company retained mineral rights on its donated land; rights to have about 200 camps on about 150 acres, to be phased out over five years; a 200-foot pipeline right-of-way across the basin; and the right to repurchase the land should the state decide it did not want it. A major new ingredient in Treen's proposal was the state's willingness to share real estate expenses with the federal government. The state agreed to purchase approximately 48,000 acres of land from willing sellers. Much of this land would be used for a natural wildlife area. Willing sellers would retain mineral rights, and no land would be condemned. Landowners insisted upon state purchase because they feared that sooner or later the Department of the Interior would attempt to turn the basin into a wildlife refuge and stop mineral production if the federal government took possession (although the scenario was improbable during the administration of conservative

Republican Ronald Reagan). Moreover, Louisiana law required that state lands be offered to the original seller or heirs if the state decided to sell. In contrast, the federal government offered no such guarantee.²⁰



An optimistic comment on the Atchafalaya Basin settlement,
New Orleans Times-Picayune/The States-Item, 25 November 1981.

After Treen announced the plan, Trowbridge, Houck, Foster "Foxy" Sanders, Charles Fryling representing the Sierra Club and Audubon Society, Bill Neely of the Dow Chemical Company, and Edgar Viellon of the Louisiana Wildlife Federation all spoke. Neely described his company's donation as "a very excellent way to ensure both the environmental and recreational interests of the people of the state." Sanders complimented the governor for doing "a very courageous thing." Houck noted, "This, nationally speaking, is a biggy." He went on to say, "There is no more widely recognized, no higher visibility, no more important single resource area issue in the United States than the Atchafalaya—south of Alaska. And it is for that reason that this resolution today...is of enormous national significance, and it's going to receive strong national attention." Reagan's Secretary of the Interior, James Watt, endorsed the plan on a trip to Louisiana, as did Treen's fellow Republican governors, who had just finished a convention in New Orleans. The one thing that Watt did not offer, however, was a commitment of federal funding.²¹

The final feasibility report and environmental impact statement that New Orleans District published and sent to the Mississippi River Commission in January 1982, incorporated most of Governor Treen's real estate proposals. Flowage easements would be obtained on approximately 59,000 acres located in the lower floodway. The plan would complete a Corps real estate initiative that dated back to 1964, when New Orleans District had determined that about 68,000 acres in the lower floodway (of approximately 590,000 acres) was not "subject to frequent overflow" in the language of the 1936 Overton Act. Therefore, the Corps had the authority to purchase flowage easements over this acreage. However, New Orleans District had managed to purchase easements over only 9,337 acres. The new proposal recommended obtaining easements over the remaining available land.

The real estate proposals also called for the federal purchase of developmental and comprehensive multipurpose easements on about 367,000 acres, excluding developed ridges. The federal government would purchase 1,500 acres, excluding mineral rights, in fee simple for recreation purposes, and contribute up to \$32 million for the fee title purchase, again excluding mineral rights, of about 50,000 acres of land. The state agreed to manage the nonflood control features of the project in accordance with regulations prescribed by the Secretary of the Army.²²

Months before the final feasibility report and EIS were completed, Colonel Sands had changed jobs. He had been promoted to brigadier general the previous summer and transferred to New York City, where he commanded the North Atlantic Division.

His work on the Atchafalaya Basin problem was surely one factor working in favor of his promotion. However, the Director of Civil Works, Major General E. R. Heiberg III, the former New Orleans District engineer, had



Elvin Ragnvald Heiberg III (1932–) was the New Orleans District engineer from 1974 to 1975, the Director of Civil Works from 1979 to 1982, and the Chief of Engineers from 1984 to 1988.

directed Sands to remain the project manager for the Atchafalaya Basin through publication of the final report. While Sands did a commendable job of overseeing the project from afar, certainly the distance handicapped him. He could not participate in some of the negotiations leading to the final compromises and had to depend on others, especially Colonel Robert C. Lee, his successor.

Houck, too, changed positions. While still a vice president of the National Wildlife Federation, he became a visiting professor at the Tulane Law School in the fall of 1981, and taught environmental law. He became a permanent faculty member in 1982. For the next several years he continued to involve himself in Atchafalaya Basin matters, periodically peppering government officials with letters over a new issue or lack of progress on an old one.

While the January 1982 report climaxed a discussion on the future floodway system that had gone on for 20 years, it also extended a discussion that had gone on nearly a century. It reflected the dramatic change that had taken place in natural resources planning. Conservationists at the beginning of the twentieth century had wanted to provide "rational planning to promote efficient development and use of all natural resources."²³ The idea was attractive, but political and economic reality often precluded its effective application. In its place, and especially in the environmental era, rational planning came to mean utilizing engineering expertise to optimize and balance public preferences. More than ever, planning required knowledge of local issues and the ability to work with local elites. The task was inherently political. In the complicated transactions involving real estate in the Atchafalaya Basin, the Corps of Engineers, in the end, could not execute this function by itself, even though New Orleans District had performed absolutely essential groundwork, and Colonel Sands had provided necessary leadership to the ABAMG. Rather, Houck and Trowbridge helped move the real estate issues off dead center, the ABAMG provided a forum for negotiations among state and federal officials, and the governor's involvement guaranteed a breakthrough.

Political Resolution—and Irresolution

THE DOCUMENT SENT to the Mississippi River Commission in January 1982 was unusual in that it combined two studies—a feasibility report, including the main elements of the general design memorandum, and an environmental impact statement. These reports normally were produced separately and at different times. The 239-page

(excluding appendices) environmental impact statement contained extensive ecological, social, and economic information, but the impact of that data on the recommendations in the feasibility study was not always evident. Professor Lynton Caldwell, one of NEPA's authors, noted 20 years after NEPA's passage how millions of dollars had been wasted on environmental impact statements because options were seriously considered that, had more attention been given to NEPA's intent and less to politics, "would have been rejected out of hand."²⁴ However laudable their objective to ensure a scientific and apolitical environmental assessment, the authors of NEPA were naive. As the Atchafalaya Basin EIS shows, political concerns as well as scientific and engineering judgment determine the topics to be studied and methodologies to be used.

The feasibility study contained engineering elements already authorized under the Flood Control Act of 1928 and subsequent laws as well as environmental, recreational, and real estate features still requiring congressional authorization. Under existing authorization, General Sands recommended continuing the 70–30 percent distribution of Mississippi River water at Old River, channel training along a stretch of the Atchafalaya, raising the levees, realigning the remaining distributary channels, enlarging the outlet channels below Morgan City, and constructing freshwater distribution structures for the Henderson Lake and Alabama Bayou areas in the lower floodway. As described in the previous chapter, he advised waiting upon further engineering and biological studies before determining what possible combination of structural—principally, the Avoca Island Levee extension—and nonstructural measures should be used to control backwater flooding below Morgan City.

The most significant unauthorized features were, of course, the real estate proposals. Other recommendations included the construction of recreational facilities, principally campgrounds and boat-launching ramps, and miscellaneous small projects to improve water circulation. Environmental proposals also included the establishment of two pilot management units. The Corps thought that of the 13 management units, five promised the most success. The agency selected two of these, Henderson Lake and Buffalo Cove, as pilot projects.

Although a considerably less aggressive program than either the Fish and Wildlife Service or the Environmental Protection Agency wished, it was reasonable. It substituted careful monitoring and empirical research for the trial and error approach inherent in the immediate, basinwide development of management units. The approach exemplified adaptive management, wherein engineering features are

considered as experimental probes. Errors would be corrected as detected and, most important, the Corps could improve future designs and plans based on lessons learned. The method promised greater long-range success in providing a sustainable environment than did a more ambitious program which threatened unforeseen and irremediable losses.²⁵

However, environmental features that raised costs without adding to flood control alarmed the new Republican administration in Washington. President Ronald Reagan came into office in January 1981 with a program to limit federal authority and encourage private initiative. Whenever possible, except in the area of national defense, the nonfederal public and private sectors were to assume more of the federal burden. This position not only appealed philosophically to the conservative administration, but responded to the growing concern over mounting federal deficits. Its complement was "supply side" economics, which emphasized slashing government intrusions into the marketplace and trimming taxes.

With the new perspective came a new method of implementation. Rather than changing policy through the legislative process, as President Carter had unsuccessfully tried, Reagan sought to change policy through manipulating the federal budget.²⁶ As Secretary of the Interior Watt bluntly said, "We will use the budget system to be the excuse to make major policy decisions."²⁷ Among potential budget cuts, few attracted the administration as much as environmental costs. Environmentalists generally disconcerted administration officials. The Bible advises us, Watt said, "to occupy the land until Jesus returns."²⁸ Evidently, he and his colleagues thought the advice sufficient justification for mineral, land, and water resources development.

William R. Gianelli became Reagan's Assistant Secretary of the Army for Civil Works in April 1981. The third in that position, Gianelli was the first to hold a civil engineering degree and also the first to come from an extensive background in water resources development. He had been director of the California department of water resources when Reagan was governor and had supervised the completion of the \$1.5 billion first phase of the California State Water Project. He wanted to find a way to initiate construction of much-needed projects, but without breaking the federal budget:

The problem as I saw it was that some additional means had to be found for financing federal water projects. Due to the pressures on the budget—particularly in the defense area and the social programs—we couldn't expect a large amount of

federal money to be allocated on the same basis that it had in the past to finance federal water projects.²⁹

A few months after his appointment, Gianelli visited Louisiana and received a detailed briefing on the Atchafalaya Basin. Subsequently, he attempted to reduce the growing tension between the Fish and Wildlife Service and the Corps of Engineers in Louisiana. The tension had increased for various reasons. In February 1980, New Orleans District personnel had snubbed FWS officials who had appeared for a Corps-EPA meeting in the district office. An EPA official had, on his own initiative, invited the FWS representatives, but the Corps had wished to confer only with EPA. District officials added to the debacle when they denied to the FWS personnel that the meeting was taking place.³⁰

However, the FWS was hardly blameless for the deteriorating relations. To accompany its pamphlet, *The Atchafalaya: America's Greatest River Swamp*, the agency published a fact sheet with an unnecessarily strident tone. In March 1980, FWS Associate Director Michael Spear instructed the agency not to distribute more fact sheets or publish more pamphlets.³¹ While the Corps appreciated Spear's initiative, other issues remained that separated the two agencies. The FWS continued to seek far greater public access into the basin than the Corps sought, vehemently opposed the Corps on the Avoca Island Levee extension, and sought substantial changes to elements of the Corps' real estate proposals.³²

In an effort to reduce the friction between the two agencies, Gianelli wrote a letter to G. Ray Arnett, the Assistant Secretary for Fish and Wildlife and Parks in the Department of the Interior (a new director of the Fish and Wildlife Service had not yet been appointed). He enclosed copies of Louisiana newspaper articles which "display the lack of teamwork that can, and in this case, does make it difficult to find reasonable and acceptable solutions to a complicated problem." Gianelli blamed "the very strong views held by the environmental wing of the public" for part of the problem but indicted some of the more vocal regional FWS officials as well. He concluded by requesting Arnett to do anything he could to heal the breach.³³ No evidence shows that Gianelli's démarche succeeded; it may be that events simply overcame it.

During the second week in January 1982, about six months after Gianelli had written Arnett, Governor Treen traveled to Washington to try to convince his Republican colleagues to support the Atchafalaya Basin compromise. He met both Watt and Gianelli, consulted with officials from the Office of Management and Budget, and presented

President Reagan with photographer C. C. Lockwood's recently published book on the Atchafalaya Basin. Publicly, the governor announced he had developed "a real cooperative relationship" with administration officials, but privately he expressed some discouragement. Attempts to convince the administration to put "start up money" in the fiscal year 1983 budget proved futile, although Treen publicly maintained that he had not expected a federal commitment so soon. Gianelli told the governor that it was "extremely doubtful" that funds would be forthcoming on a nonreimbursable basis and suggested that Treen consider additional cost sharing or "innovative financing" (less federal involvement) methods. Treen vacillated about seeking aid from the Louisiana congressional delegation, obviously hoping the administration would in the future support him with more than rhetoric.³⁴ Finally, the delegation took the initiative. Louisiana's two senators and eight representatives appealed directly to President Reagan in April to recommend that Congress provide \$25 million in federal funds for real estate acquisition in the basin; the remaining \$25 million for land purchase would be the state's responsibility.³⁵

In the meeting with Treen, Gianelli also brought up the Avoca Island Levee extension question. In fact, he exaggerated its importance, for he mistakenly believed that many of the plans dealing with the Atchafalaya Basin could not be implemented until a final decision on Avoca Island was made. Actually, the future of the Avoca Island Levee little affected most of the recommended project features. Gianelli's greater concern, however, was funding. He later complained that the people who developed the Atchafalaya compromise "were not concerned about the cost and were free to recommend large expenditures of federal money."³⁶ This perception apparently developed early in his study of the Atchafalaya Basin plans and remained with him throughout his time as Assistant Secretary.

While Louisiana residents debated the environmental consequences of the Avoca Island Levee extension, and the administration in Washington pondered the funding ramifications, the staff of the Mississippi River Commission in Vicksburg (Lower Mississippi Valley Division staff) worried over the consequences of *not* constructing the extension. The staff concurred in General Sands' report except for recommendations regarding Avoca Island and the construction of pilot management units. They thought the latter recommendation could result in adverse environmental impacts, and they believed that the Avoca Island proposal ran contrary to the stipulations of the 1928 Flood Control Act, which provided for protection of the backwater area. In this they accepted the argument of proponents of the levee

extension. Led by Morgan City interests and the St. Mary's Industrial Group, which represented some large landowners, a massive campaign had deluged Vicksburg with letters demanding that the extension be built. While Corps officials in Vicksburg may have reached the same conclusion, regardless, the campaign undoubtedly strengthened the case for rejecting New Orleans District's position that the extension be delayed until further studies were done.³⁷

The Mississippi River Commission met on 19–20 April 1982, its 316th session, to review the comprehensive report of the New Orleans District and to offer its recommendations to the Chief of Engineers. Six of the seven members were present; only Rear Admiral Herbert Lippold, the recently appointed representative from the National Oceanic and Atmospheric Administration, could not attend. Three members were Corps of Engineers general officers, including Major General William Read, the commission president and Lower Mississippi Valley Division engineer. Of the three civilians, only one, Roy Sessums, had a long familiarity with Atchafalaya Basin problems. Sessums had been the Louisiana director for public works from 1952 to 1957. R. D. James was a self-employed farmer and a manager of cotton gins and grain elevators in New Madrid, Missouri. He had joined the commission only a few months previously. Sam E. Angel, a planter, ginner, and operator of a cottonseed business in Chicot County, Arkansas, was also a commissioner with the Chicot Country Watershed District.³⁸

After MRC staff presented their findings, including their two reservations to the proposals contained in the report, the commissioners began an animated discussion on Avoca Island. Major General Hugh Robinson, the Southwest Division engineer, defended the district's proposals vigorously, but the three civilians clearly sympathized with the MRC staff position. Brigadier General Richard Kem, the Ohio River Division engineer, sought a compromise and suggested inserting language that would include the construction and operation of water diversion structures to ameliorate adverse impacts. With the language inserted, on the following day the commission recommended the immediate construction of a 14,000-foot interim extension of the Avoca Island Levee (which had been the proposal included in the original tentatively selected plan). Only General Robinson dissented.³⁹

Led by Roy Sessums, the three civilians also vigorously opposed the proposals on management units and public access, arguing that they threatened both private land rights and the beauty of the basin. General Sands, who had come from New York to attend the proceedings, pointed out that no one had objected to the management units at the

public hearings and Congress had essentially directed that approach, but he failed to convince the civilians. Finally, the commission voted on the entire report. It unanimously recommended construction of the features already authorized—essentially, the engineering features dealing with flood control, including Avoca Island. However, the commission split 3–3 on the real estate and environmental features yet to be authorized. On General Kem’s motion, the commission voted unanimously to forward its findings to the Chief of Engineers with the indication that no majority had been reached on real estate and environmental proposals.⁴⁰

The commission’s recommendation on Avoca Island generated impassioned debate. Terrebonne Parish residents, stung by the MRC vote, mounted their own letter-writing campaign in opposition to the extension.⁴¹ Meanwhile, the Louisiana Senate and House of Representatives passed identical resolutions in June requesting the Louisiana congressional delegation to ensure that all necessary studies be done before any extension of the levee, including studies to determine feasible alternatives to construction.⁴² At the request of the Louisiana State Representative Murray Hebert, a group went to Washington to meet with Major General Heiberg. Besides Hebert, the delegation included David Soileau, Fish and Wildlife Service; Mike Voisin, Louisiana Oyster Growers and Dealers Association; John Woodard, Tenneco-LaTerre Land Company; and Elizabeth “Betty” Haw, wetlands chairman, New Orleans Group, Sierra Club. The representatives stressed the adverse environmental impacts and the questionable cost-effectiveness of the Avoca Island Levee extension. According to Soileau, Heiberg seemed particularly disturbed by the charge that the extension would not provide much flood protection. Haw presented Heiberg with a petition of over 8,000 signatures supporting additional studies. While Heiberg listened attentively, he stressed that he had not yet formally received the MRC recommendations from Vicksburg. When he did have them, he would have three options: accept them, reverse them, or return them with the request that the MRC reexamine its position. Later, the delegation made essentially the same presentation to cost-conscious Assistant Secretary Gianelli. Soileau pointed out that the Avoca Island Levee would be entirely federally funded in accordance with the 1928 Flood Control Act. In contrast, the ring levees proposed by the FWS would be cost-shared by local interests. According to Soileau, both Gianelli and Heiberg appeared inclined to reverse the MRC’s Avoca Island decision.⁴³

Soileau was right. Upon Heiberg's recommendation, Lieutenant General Joseph Bratton, the Chief of Engineers, reversed the MRC's Avoca Island decision at the end of July and directed that construction be delayed until necessary engineering and biological studies had been completed.⁴⁴ Although such a reversal was not unprecedented, it was highly unusual and certainly rankled the civilian members of the MRC.⁴⁵ Corps personnel in Vicksburg continued to encourage their colleagues in the New Orleans District to focus more on engineering and flood control matters than on environmental issues.⁴⁶

On 30 July 1982, General Bratton sent out his proposed report for comment by states and agencies. His report was a complete victory for General Sands. Besides reversing the Avoca Island decision, Bratton also accepted Sands' recommendations on the unauthorized features:

After careful consideration of all issues, I conclude that the unauthorized features of the plan recommended by the reporting officer [Sands] are in the public interests, are justifiable on the basis of combined economic and beneficial environmental effects, are responsive to the Congressional resolutions which requested a "...comprehensive plan for the management and preservation of the water and related land resources of the Atchafalaya River Basin...," and are therefore proper added increments of the Mississippi River and Tributaries Project.

Based on that finding, Bratton supported all of Sands' recommendations, including the real estate proposals and the construction of two pilot management units. The Corps did not bother to calculate the benefit-cost ratio for the flood control features of the plan because they were considered "integral, inseparable features of the authorized MR&T [Mississippi River and Tributaries] project," whose benefits



Joseph Key Bratton (1926–)
Chief of Engineers from 1980 to 1984.

exceeded costs by a whopping 16.5 to 1 margin. However, the benefit-cost ratio for the nonflood control features of the plan (not yet authorized) was a marginal 1.01 to 1, according to the Corps. Most of the measurable benefits here resulted from increased recreational opportunities, although the report pointed out that environmental features provided many intangible benefits, especially the preservation of valuable forest and wetland areas.⁴⁷

News of General Bratton's report accelerated efforts to complete the studies on Avoca Island. The Fish and Wildlife Service provided a status report on its studies on 3 August. New Orleans District and Mississippi River Commission planning division personnel met two weeks later and agreed on studies still to be done for both Avoca Island and the main floodway system. At the end of September, Corps and Fish and Wildlife Service representatives discussed the remaining backwater studies relating to the Avoca Island Levee extension. They parceled out responsibilities for collecting information on meteorology, flooding, land subsidence, marsh change, salinity, and timber mortality. They also discussed funding requirements.⁴⁸

Later, the Fish and Wildlife Service recommended to Colonel Lee, the recently designated New Orleans District engineer, that the ABAMG be reconvened. Lee declined, arguing that there was "no real benefit in formalizing such a group for the remaining Atchafalaya Basin studies." The ABAMG had served a "unique and valuable role." However, "the Corps of Engineers' planning, coordinating, and public involvement processes" could respond to "inputs from all public and private interests." Lee reminded FWS personnel that "our working relationship with your agency will continue under the provisions of the Fish and Wildlife Coordination Act and our interagency agreement."⁴⁹

As Lee said, the ABAMG was unique, and his decision quietly buried this important experiment in public-private, interagency cooperation. For over a decade, the ABAMG had served as a mechanism for discussion and argument on Atchafalaya Basin problems. The arguments that took place in this forum mirrored and often magnified many of the environmental-developmental disputes occurring in the United States. Certainly, some in the Corps doubted that the ABAMG was necessary and believed that federal laws and Corps regulations were sufficient guarantors of public input and comprehensive analysis. But they were wrong about the ABAMG's merits, no matter how much additional paperwork and aggravation the group caused the Corps. Even in the lower Mississippi valley, where the Corps had done so much to protect life and property, the agency's reputation was not entirely positive. In the environmental era, the Corps' traditional

missions and values were questioned in Lafayette as well as in Los Angeles, in New Orleans as well as in New York City. Therefore, the Corps' willingness to sit down with its detractors and work with them helped to enhance the agency's credibility.

The Atchafalaya Basin Management Group was one of the first efforts in the country to involve all sides in the planning of a controversial project. By the end of the 1970s, public works critics around the country were enthusiastically embracing this "fishbowl" approach to problem solving. Some of these efforts were solely state and local in nature. Others involved federal agencies. Thus, Colorado environmental and public interest groups joined the Metropolitan Water Round-table, which Governor Richard Lamm established in 1982 to address Denver's future water needs.⁵⁰ In the Pacific Northwest, a number of public and private organizations began working together at the state and federal levels to advise officials on water use and to protect the remaining salmon population.⁵¹

One example directly relates to the Atchafalaya Basin. In 1984 Congress authorized the creation of the Garrison Diversion Unit Commission to resolve concerns over the environmental impacts of the Bureau of Reclamation's Garrison Diversion Project in North Dakota. Secretary of the Interior William P. Clark appointed a commission that included representatives from academia, federal and state agencies, and environmental organizations. At the suggestion of Under Secretary of the Interior Ann D. McLaughlin, Clark asked Treen, whose gubernatorial term had just ended, to chair the commission. Treen heard that McLaughlin had recommended him specifically because of his experience with similar public-private negotiations dealing with the Atchafalaya Basin.⁵²

Many government officials came to recognize that the early and active involvement of citizen groups improves the equity and thoroughness of the planning process. Such involvement, of course, lengthens the process and often increases the cost. Yet, the benefits of empowering public groups and responding to long-term problems with equitable and technically correct solutions argue in favor of the fishbowl process.

In his letter to the Fish and Wildlife Service, Colonel Lee addressed the studies still to be done. The FWS feared that some studies—essential from its point of view—would not be funded. Lee's answer provided small comfort. The colonel simply stated that details of remaining studies still needed to be finalized. Until then, it would be premature to discuss an additional transfer of funds from the Corps to the FWS.⁵³ Although many New Orleans District personnel had wearied of FWS appeals for money and more studies, Colonel Lee's

response was objective. Indeed, more than details still needed to be worked out. Only in mid-December did senior managers from the planning and engineering division in New Orleans agree to try to finish in about three years all biological and engineering studies dealing with the Atchafalaya Basin. Thereafter, the district could develop a general design memorandum for the Avoca Island Levee extension.⁵⁴

However, once the studies were completed, a general design memorandum was not needed. Engineering studies showed that the Avoca Island Levee extension would provide minimal flood control protection, particularly whenever the Atchafalaya had high water and winds blew in a storm from the Gulf. The benefits were marginal. Finally in 1991, Robert Schroeder, by then chief of planning for New Orleans District, recommended "that the study be suspended due to the limited support, high cost, local and state opposition, and the high probability that the area would continue to flood from sources other than the Atchafalaya backwater even if the Avoca Island Levee Extension were constructed." The Lower Mississippi Valley Division office quickly agreed.⁵⁵ Thus ended an awkward and embarrassing chapter in the district's history. Some of the objections opponents had made for years were substantiated by the Corps' own studies. Should the district have been able to see the problem earlier? In fact, some district personnel had, but they were outmaneuvered and outranked by those who were unwilling to give up on a project that had been authorized and that promised even a bit of flood control. Within the district, the debate was generational as much as philosophical, and as time wore on, the younger generation became more influential. The Avoca Island Levee extension issue remains a useful ruler to measure the change of policy and the evolution of values within the Corps of Engineers.⁵⁶

The comment period on General Bratton's proposed report extended to 1 November 1982, and the Corps took another two months to evaluate the responses. However, the Chief of Engineers' position was clear, and the battleground moved to the office of the Assistant Secretary of the Army for Civil Works, Congress, and the White House. Proponents knew about administration reluctance to commit federal funds to the environmental features and also realized that Congress faced a backlog of water resources legislation through which the Atchafalaya Basin project needed to be pushed. On 16 November, Governor Treen met President Reagan in New Orleans and once again appealed for support in obtaining \$25 million in federal funds for land purchase in the basin.⁵⁷ Ben Skerrett and Odon Bacque, on behalf of the Lafayette Chamber of Commerce, also appealed to the

President for funding. Probably, neither the governor nor local interests realized how difficult their sell would be. However, as time went on the reality dawned.



Louisiana Governor David Treen shows the Atchafalaya Basin concept to President Ronald Reagan in New Orleans, 16 November 1982.

On 28 February 1983, General Bratton signed the Atchafalaya Basin report and sent it to the Secretary of the Army through the office of the Assistant Secretary of the Army for Civil Works. That same day, he also formally notified General Read of his approval of the engineering proposals, minus the Avoca Island Levee extension, under the discretionary authority given to him by existing law.⁵⁸ While this final action on the part of the Corps of Engineers ended over ten years' effort starting with the meeting between General Clarke and National Wildlife Federation leaders in late 1971, it did not end the controversy.

In fact, in one critical way the report fueled the controversy. Ever since New Orleans District had submitted its report to the Mississippi River Commission in early 1982, questions had been asked about the project's final total cost to the federal government. Within the civil works directorate at the Corps headquarters, the financial analysis had

been going on for a year, and each spreadsheet had produced new calculations. Three documents suggest the changing numbers: General Heiberg's letter to Secretary Gianelli dated 9 March 1982,⁵⁹ General Bratton's proposed report of late July 1982, and Bratton's final report of 28 February 1983. In general, each calculation produced a greater financial burden for the federal government. The numbers made already reluctant administration officials even more nervous about the project.

Cost Estimates for the Atchafalaya Basin Project			
	Heiberg Letter 9 March 1982	Bratton Proposed Report July 1982	Bratton Final Report February 1983
Currently Authorized —No Further Approval Required	\$551,631,000	\$551,631,000	\$816,980,000
Currently Authorized —Chief's Approval Required	\$210,590,000 Avoca Island costs not specified	\$260,839,000 \$56,200,000 for Avoca Island	Chief's approval obtained in 28 February report
Congressional Authorization Required	\$225,785,000	\$180,527,000	\$250,240,000
Total Cost of Recommended Plan*	\$988,000,000	\$992,997,000	\$1,067,980,000 \$58,800,000 for Avoca Island

*Total cost of recommended plan did not include cost of work completed, currently under construction, or to be completed before the fiscal year 1986. In his letter, General Heiberg estimated the overall project cost at \$1,559,209,000 including the modifications.

In a different political environment, General Bratton's report might have received pro forma approval from the Assistant Secretary's office and been forwarded to the Office of Management and Budget for eventual submission to Congress. However, this was not a normal report, and Secretary Gianelli was not reluctant to raise questions. He suspected that the large amount of federal dollars involved could not be justified and challenged nonfederal interests to assume more of the financial burden. If anything, his skepticism grew as cost figures escalated and a closer inspection of the project suggested to him that some of the environmental and recreational benefits were primarily local in nature.⁶⁰ In mid-April, Bratton wrote Read that it was his understanding that "Mr. Gianelli has no intention of forwarding any recommendations on the Atchafalaya plan to the Congress. The report

remains in his office." However, Gianelli raised no objections to Louisiana's working out an arrangement with the Department of the Interior to accomplish some of the report's proposals.⁶¹ In other words, if federal funds were to be spent on the nonflood control features of the plan, they would come from the Department of the Interior, not from the Department of the Army.

And that, initially, is exactly what happened. In Public Law 98-548, signed on 26 October 1984, Congress authorized the establishment of the Atchafalaya National Wildlife Refuge to be administered by the U.S. Fish and Wildlife Service. No doubt at the behest of Louisiana lawmakers, the legislation provided that, in the event the federal government no longer required the real estate, the Fish and Wildlife Service should first offer the properties to the original vendors, or "their heirs, successors, or assigns at the same price then being offered by any third party, which price shall in no event be less than the current fair market value." In the next two years, the FWS purchased 15,220 acres of land from willing sellers and on 6 October 1986 formally established a national wildlife refuge south of U.S. Route 190 and just east of the Atchafalaya River. The refuge included parts of Pointe Coupee, St. Martin, and Iberville parishes and abutted the Sherburne Wildlife Management Area, nearly 12,000 acres of land purchased by the state in 1983 in response to Governor Treen's commitment.⁶²

Little took place in the months thereafter. Gianelli resigned and was replaced by his deputy Robert K. Dawson (who was not confirmed until December 1985). If anything, Dawson was even more opposed than Gianelli to federal support of the nonflood control features of the Atchafalaya project. However, he was preoccupied with pushing water resources legislation through Congress; a substantial authorization law had not been passed since 1970, and the Corps' future in water resources was beginning to look very bleak.⁶³

Congress again took the initiative. In the Supplemental Appropriations Act of 1985 (Public Law 99-88), Congress authorized the revised Atchafalaya Basin project, even though the final report had never left Dawson's office for transfer through OMB to Congress. Moreover, the revised project, along with others, was authorized in an appropriations law, thereby circumventing the normal congressional procedure of passing authorizing legislation first and later passing an appropriations measure to provide funding. Although this legislation was passed before new cost-sharing policy had been established, which the administration desperately wanted, the administration did not object since the law stipulated that funds would lapse on 30 June 1986 for those projects

whose sponsors had not been able to execute a satisfactory cost-sharing agreement with Dawson's office. No such formal agreement was reached on the Atchafalaya Basin. President Reagan signed the act on 15 August 1985.⁶⁴

Despite congressional authorization of the project, Dawson refused to budge. The administration supported the purchase of flowage easements and development rights on 367,000 acres of land, excluding the developed ridges, to prevent construction of additional structures, and estimated that this acquisition would cost about \$14 million. Even here, Dawson stressed that administration support depended on passage of generic cost-sharing legislation. The Assistant Secretary flatly refused to support the purchase of the stricter environmental easements over the same acreage at a cost of \$100 million. Concerning the environmental and recreational features, Dawson allowed, "Other Federal or non-Federal agencies may wish to pursue these measures to the extent their programs will allow."⁶⁵ As with Gianelli earlier, that was Dawson's hope, but by early 1986 it became apparent that other agencies would not take over the Army's burden. In accordance with Dawson's guidance, Major General Henry J. Hatch, the director of civil works, instructed the Lower Mississippi Valley Division and New Orleans District not to schedule any work on management units, canal closures, or recreation areas and not to acquire flowage or environmental easements or purchase additional land for recreation and public access until the administration had decided on cost-sharing guidance.⁶⁶

Dawson and the Corps headquarters initiated another approach. The Senate was then considering cost-sharing legislation of its own. One bill (S. 1567) permitted full federal funding of fish and wildlife enhancement only if the benefits involved the protection of threatened or endangered species or of species deemed to be of national economic importance, such as certain species of fish. Dawson wondered whether such language might exclude full federal funding of environmental features whose benefits were more vaguely defined. The Atchafalaya River Basin was the largest river swamp in the United States, but could this justify protecting it as a national benefit to be partially or wholly funded by the nation's taxpayers?

In spring 1986, personnel in the Corps' civil works directorate discussed this question. Some argued that the unique nature of the basin was obvious and demonstrated its national significance. Others thought it best to avoid the issue altogether and treat the entire project as ongoing construction using the cost-sharing proposals contained in the original report from New Orleans District. Given this approach, the federal government would pay for just under 80 percent of the total

project. Thomas Sands, now a major general, Lower Mississippi Valley Division engineer, and MRC president, complicated matters by noting in congressional testimony that the value of significant local benefits dictated the nonfederal contribution toward the cost of environmental features. That raised the question of just how national and local benefits of environmental and recreation features should be separated. In the end, Corps headquarters recommended that any law requiring that fish and wildlife enhancement be considered national benefits should apply to the public access features in the Atchafalaya Basin.⁶⁷

On 17 October 1986, Congress finally passed the water resources act that had eluded both the legislative and executive branches for years. President Reagan signed the measure a month later in a small ceremony at the White House. The Water Resources Development Act of 1986, more often called WRDA-86 (Public Law 99-662), authorized about \$16 billion for 377 different water projects, of which the federal government was to pay approximately \$12 billion. It also authorized some significant studies and, most important, made revolutionary changes in cost-sharing and user fee policies, which together meant that nonfederal interests would pay a far greater share for the construction and operation of federal water projects. Included among the newly authorized projects was the Atchafalaya Basin (Section 601), authorized for a second time, but this time in normal fashion. Moreover, the authorization relieved the Corps of further debate on the basin's national benefits. The Louisiana congressional delegation had inserted language that "fish and wildlife enhancement benefits provided by this project shall be considered to be national for the purposes of section 906 of this Act." Section 906 included some of the language from the Senate bill and stipulated that the federal government bear the first costs of enhancement whenever the benefits were deemed national. Section 906f specifically directed that the environmental features of the Atchafalaya Basin floodway system be considered national benefits.

Once more real estate had become a major sticking point in resolving the Atchafalaya Basin project; and, as often happens, Congress resolved the issue in favor of nonfederal interests. The administration still objected to funding the environmental features, including those that entailed the acquisition of easements or land in fee simple.⁶⁸ However, New Orleans District did work on a real estate design memorandum (REDM) to designate the required land and easements and to identify costs. Significantly, this memorandum eliminated the public access easements that had been so laboriously crafted a few years before. Landowner concerns over liability for public health and safety on lands opened to public access spurred this move.

Henceforth, public access would be granted only through fee simple acquisition by the federal or state governments.⁶⁹

One of the goals of the feasibility report had been for federal and nonfederal interests to share the costs of purchasing some 50,000 acres of land in fee simple for public access. In preparing the REDM, New Orleans District calculated that this objective would be satisfied by including the nearly 12,000 acres of land the state had purchased for the Sherburne Wildlife Management Area and the approximately 15,000 acres of land purchased by the Fish and Wildlife Service for the Atchafalaya National Wildlife Refuge, leaving only 23,000 acres to be purchased by the Corps. The REDM also contained the language for the comprehensive easement (excluding mineral and most timber rights) to be acquired over the remaining 365,000 acres (2,000 acres less than the number in the feasibility study).⁷⁰

New Controversies and Steps Toward Implementation

AFTER PRESIDENT REAGAN SIGNED the Continuing Appropriation Act of 1988 (Public Law 100-202) on 22 December 1987, which appropriated funds for Atchafalaya Basin real estate acquisition, New Orleans District turned from planning to implementation and forwarded the REDM for formal approval. The act directed the Secretary of the Army (in reality, the Corps) "to acquire necessary interests in real estate for all features of the project, flood control, developmental control, environmental, and public access, beginning at the North end of the basin and preceding southerly." It specifically directed the Secretary to expedite the acquisition of land in fee simple, excluding minerals, necessary for public access to the basin in accordance with Public Laws 99-88 and 99-662. The direction to proceed from the north to the south was a common-sense approach. The northern part contained more structures and more threats to development. Oliver Houck had recommended this procedure to Secretary Dawson in late 1986. However, probably others, including New Orleans District personnel, had the same idea. The approach ensured that both money and water would flow downhill—but very gradually.⁷¹

In April 1988, the New Orleans District submitted its REDM through the Lower Mississippi Valley Division to the Corps headquarters in Washington. Secretary Dawson had left office in May 1987, and the new incumbent in the Assistant Secretary's office, Robert Page, did

not have the visceral dislike for the project's real estate features that his predecessors had. Additionally, the fact that Congress had explicitly appropriated funds for the real estate features allowed the headquarters to grant its approval in October without fear of opposition from the office of the Assistant Secretary. Thereupon, the district began acquiring land in January 1989. By 1994, it had obtained approximately 16,000 acres of land in fee simple and another 16,000 acres of easements.⁷²

Although the REDM met the approval of higher headquarters, it greatly disturbed some of the original participants in the ABAMG. One of the most contentious issues was the district's decision to count the Sherburne Wildlife Management Area and the Atchafalaya National Wildlife Refuge toward the 50,000 acres to be purchased for recreation. Both landowners and environmentalists charged that the original feasibility report, now formally authorized, did not specifically include those parcels of land. Indeed, the federal wildlife refuge and the state wildlife area were authorized in altogether different federal and state legislation. Moreover, they were purchased before Congress had passed the 1986 Water Resources Act and therefore should not be counted. Less persuasive was the argument that the Corps had an obligation to purchase all 50,000 acres, which seemed contrary to the original feasibility report.⁷³

The other major issue dealt with timber management. Like the issue of public access and recreation, this problem began almost immediately after the district finished its REDM. On 23 September 1988, Louisiana Governor Buddy Roemer complained to the Chief of Engineers that the REDM was far too vague. It prohibited clearcutting, stipulating only that timber owners conduct their business in an environmentally sensitive way. That approach, Roemer pointed out, ignored an agreement on silvicultural activities that ABAMG members had approved in mid-1981 and which was far more restrictive. Moreover, the REDM even allowed the New Orleans District engineer to approve clearcutting on a case-by-case basis. Unfortunately, subsequent discussions on these points failed to resolve the issues. On 6 April 1991, Governor Roemer sent a far stronger letter to the district in which he strongly disputed the Corps' position on several matters regarding real estate, but the biggest dispute remained the timber issue. In this letter, Roemer argued that a landowner could leave one or two merchantable trees on his property and would thereby avoid being charged with clearcutting. Hundreds of acres could be cleared of all but a few trees without the landowner violating easement provisions. Not only Louisiana but various environmental groups believed that the

easement fell far short of the expressed intent of the feasibility report. Some organizations, such as the Sierra Club, threatened to file lawsuits.⁷⁴

When Colonel Michael Diffley became the New Orleans District engineer in summer 1991, he decided to reexamine the district's real estate design memorandum. The result was a series of internal meetings within the district, external meetings with critics of the REDM, and discussions with the division office in Vicksburg. In consequence, the district wrote a supplemental report to the REDM, which substantially revised the original version, and submitted the new document to the Mississippi River Commission in October 1992. The easement contained in the supplement required landowners to retain certain tree species of specific diameter and height that benefitted the environment. For instance, bald cypress greater than 42 inches in diameter and 10 feet high could not be harvested. Substantial restrictions were likewise placed on harvesting oak, ash, sweet pecan, and water tupelo.⁷⁵

While this far more restrictive easement was a surprising reversal of the district's position, the decision on the issue of the 50,000 acres was even more startling. Reversing the district's position expressed in the original REDM, real estate lawyers in the district advised that the Water Resources Development Act of 1986 eliminated the cost-sharing requirements for the acreage, and also removed the \$32 million cap for federal acquisition. The lawyers based their decision on the congressional decision that Atchafalaya Basin fish and wildlife features were national benefits subject to full federal funding. They also argued that Congress intended to remove the \$32 million cap since full federal funding for the acreage could not be reconciled with an arbitrary expenditure cap of \$32 million.⁷⁶

Supported by this legal opinion, the district recommended that the federal government purchase the 50,000 acres and that neither the Sherburne Wildlife Management Area nor the Atchafalaya National Wildlife Refuge should be counted toward the total acreage. However, 16,000 acres already acquired by the district would be included in the total. The Lower Mississippi Valley Division (technically, the Mississippi River Commission staff) concurred in this interpretation and forwarded the entire package to Corps headquarters in March 1993.⁷⁷

Charles Flachbarth of the office of chief counsel in headquarters was unconvinced. He concurred that neither the state nor the FWS lands should be counted toward the 50,000 acres, but he saw nothing in the law that removed the \$32 million cap.⁷⁸ Under other circumstances, his interpretation may have caused problems for the district, but since land values in the basin had declined, it appeared that the \$32

million would be sufficient to purchase the full 50,000 acres. After Corps personnel from Vicksburg, New Orleans, and Washington resolved some minor issues, the office of the Assistant Secretary of the Army for Civil Works approved the supplemental report in January 1994.⁷⁹

More significant than the contesting legal opinions, an enormous shift had occurred in the position of New Orleans District. Part of the responsibility for this change rested with Colonel Diffley, who worked hard for a new agreement and persuaded his staff to make significant changes. Pressure also came from the district's accountants; the administrative costs involved in drafting and redrafting of studies and reports amounted to millions of taxpayer dollars. The sooner a final resolution could be made, the sooner funds could be used on actual acquisition, construction, and environmental improvements. Finally, district personnel came to view environmentalists with a different perspective. Corps people in New Orleans had always considered the levee districts, the state department of public works, the various parishes and, of course, those who suffered from periodic flooding as their clients. In contrast, environmentalists, even those who obtained respect within the district, were not considered as clients so much as well-informed experts (usually) whose advice occasionally helped, but nearly always resulted in delays and increased costs. Only in the 1990s were environmentalists accepted as clients, as customers who needed to be served as much as those who focused on the flood control dimensions of a project.⁸⁰ Again, some of this change might have resulted from Diffley's efforts, but the colonel became district engineer when management responsibilities devolved on supervisors more at ease with the complicated planning process typical of federal public works projects in the environmental era.

By the mid-1990s, some of the most controversial environmental provisions of the 1982 feasibility report appeared on their way to realization. In mid-1994, Louisiana expressed an interest in working with the Corps to develop a recreation plan for the basin that included the state acquisition of 1,500 acres of land and construction costs to be equally divided between the state and federal governments. The construction included the development of campgrounds, a visitors center, boat launching ramps, and a nature trail. Meanwhile, the Corps finally began work on one of the 13 management units, Buffalo Cove. In late 1994, New Orleans District constructed a prototype model test in the northwest corner of Buffalo Cove. The work consisted of removing sandbars at the head of Bayou Eugene, clearing and snagging operations, cutting Bayou Eugene in three places and the Florida



Demonstration project in Buffalo Cove management unit.
V-cut construction with snagging and clearing at Bayou Eugene, November 1994.

Pipeline Canal in one location, and developing a monitoring program to assess the impact of this work on flow patterns, sand deposition rates, and water quality. The district contemplated using the experience gained from this test to develop an overall plan for the Buffalo Cove site. Gradually, the Corps and the state were implementing some of the ideas first articulated nearly 20 years before.⁸¹

The Uncertain Future

ENTANGLED IN POLITICAL ISSUES, philosophical disputes over land ownership and the appropriate role of government, scientific and engineering uncertainty, and occasional personality conflicts, the resolution of the Atchafalaya Basin problem has taken longer and cost far more than anyone in 1971 could have anticipated. Before the plan had been discussed, formulated, debated, revised, and authorized, nearly a generation—a new environmental generation—had passed. And although formulating and implementing the plan involved nonfederal interests in an unprecedented fashion, the heaviest funding and maintenance burden remained with the federal government. In 1995, Corps officials estimated that the total Corps investment in the

Atchafalaya Basin would reach \$2 billion. Of this, nearly \$1.7 billion was the estimated cost of flood control features built since 1929 or remaining to be constructed. Other features would cost somewhere over \$160 million. This included the development of management units, recreation features, public access for fishing and hunting, and real estate.⁸² Real estate costs had increased substantially because the more restrictive easements cost more to obtain. Of course, congressional willingness to appropriate necessary remaining funds for the Atchafalaya project will reflect changing budget priorities.

Even if money were not a factor, other uncertainties have appeared. One controversy surrounds Wax Lake Outlet. In 1987-88, the Corps of Engineers built a 4,000-foot rock weir across Grand and Six Mile lakes to regulate the distribution of flows between the Wax Lake Outlet and the lower Atchafalaya River. The weir was to ensure that 70 percent of the flow went through the lower Atchafalaya River and the remaining 30 percent through Wax Lake, thereby accelerating the channel development of the lower Atchafalaya and helping to maintain the ability of both channels to pass the project flood to the Gulf of Mexico. However, the people of Morgan City and Berwick petitioned their congressional delegation and successfully argued that the weir raised flood crests along the waterfront of their towns. Subsequent studies showed that the flood crest at Morgan City would be reduced by 8.5 inches if the weir were removed. In response to public concerns, the Corps thereupon removed the weir in 1994-95. In 1995, the agency began to reevaluate options for ensuring the project flood was safely passed to the Gulf.⁸³

No doubt other engineering studies will be made. The Corps will continue to monitor the Atchafalaya Basin floodway system's ability to carry the project flood. Local citizens will urge change whenever they perceive danger in the system of flood protection. Environmentalists will seek ways to preserve the ecosystem. Nature, too, will demand study of the river. The Atchafalaya's hydrologic regime is changing, requiring constant monitoring and data collection. Most dramatically, the river continues to build its delta into the Gulf of Mexico. Meanwhile, sediment deposits on certain reaches of the river may affect discharge, while the parts of the riverbed consisting of clay rather than sandy alluvium significantly reduce natural channel scouring and make dredging both expensive and difficult.⁸⁴ In short, as the river changes, old engineering studies become outdated. It seems probable that new engineering studies will offer modifications to both the flood control and environmental features of the project.

Time is the enemy of the Atchafalaya Basin for time creates uncertainty. Yet, very few aspects of the Atchafalaya Basin compromise can be done quickly, and this is particularly true of the heart of the plan—the easements. Ample opportunities arise, then, for political and economic changes to affect the compromise, and developers will no doubt seek ways to alter public access provisions. Moreover, public values and constituencies change over the years and bring forth new demands. Issues of equity and basic justice will arise and may alter both law and policy. Thus, although federal and state agencies cooperate far better today than at the beginning of the environmental era, successful implementation of any comprehensive plan for the Atchafalaya Basin can hardly be guaranteed. As it has throughout our nation's history, our policy toward the Atchafalaya Basin will continue to mirror evolving and often competing values. Not just technological skill, but wisdom is required. Plans change, but the necessity for sensitive and flexible planning will remain for a very long time.

Afterword

A Sense of Place, A Sense of Balance

THE ATCHAFAHALAYA BASIN has essentially become a "designer wetland," a monument to human contrivance and ingenuity. Like so many other places in the world—European woodlands, California's Central Valley, refurbished beaches along the Atlantic Coast, or the manicured English landscape—its "natural look" results from a heavy dose of technology. Indeed, within the basin it is impossible to separate human and natural impacts. An enormously powerful and sophisticated technological system has dramatically altered the basin's natural water flow, affecting both water quality and quantity.

The technological system can be traced back to the eighteenth century, when self-styled engineers did not so much manipulate the Atchafalaya Basin as tinker with it. They built levees a few feet above bank level that offered a small, and temporary, measure of flood relief. Improvisation continued into the early nineteenth century when snagging and clearing operations complemented levee building. Unfortunately, these early efforts often proved futile. Bars and rafts reformed; inadequate levees failed. Nevertheless, the work continued.

Untrained property owners were not the only improvisers. State and federal engineers also resorted to craft and imagination in lieu of either empirical knowledge or scientific theory. Political considerations sometimes dictated their ad hoc approach as much as did engineering intuition or systematic planning. No better example can be given than the mid-nineteenth century Louisiana state engineers who endured both nature's whimsy and legislative caprice while trying to clear the state's waterways. Even earlier, in the 1830s, on the Mississippi River, Henry Shreve, an Army Corps of Engineers employee, made his cutoff at Turnbull Bend which significantly increased the likelihood that the Mississippi would eventually flow in the Atchafalaya's channel. Although arguably the most consequential for the Mississippi and Atchafalaya rivers, Shreve's decision was only one of myriad questionable navigation "improvements." Many of these efforts demonstrated that a mix of good intentions and inadequate knowledge can hamper navigation and flood control as surely as sandbars and river rapids do.

After the Civil War and Reconstruction, the federal government, urged on by Louisiana interests, assumed greater responsibility for flood control and navigation on the Mississippi River. After its establishment in 1879, the Mississippi River Commission, acting through the Corps of Engineers, built revetment and contraction works, constructed sill dams in the Atchafalaya River, dredged, and eventually built levees to complement those that states and local levee districts had constructed. Although the MRC developed a plan for improving flood control and navigation on the Mississippi River, without explicit congressional authorization it did not develop a flood control plan for the entire lower Mississippi basin. That did not happen until after the disastrous flood of 1927.

The 1928 Flood Control Act reflected Progressive era emphases on basinwide planning and federal involvement. Flood control planning would not be left to the mercy of local politics and diverse engineering designs. Instead, Congress authorized the Corps of Engineers to develop a regional, multistate concept based on hydrologic boundaries, not political borders. In this grand scheme, nature determined the intertwined destinies of the Atchafalaya and Mississippi rivers. However, the Corps of Engineers assured that the rivers' technological systems would also be coupled—in a way that clearly subordinated the interests of the Atchafalaya Basin to those of the Mississippi River.

After passage of the 1928 Flood Control Act, politicians, engineers, and floodway residents strove to define the appropriate responsibilities of the federal government. Although the Mississippi River and Tributaries flood control project injected millions of dollars into states and local communities and created vitally important jobs during the Depression, the project also threatened the land, income, and birthright of hundreds of landowners. Consequently, federal flood control in the lower Mississippi delta raised complaints from the day Congress passed the 1928 act. Technical engineering questions stirred controversy, but real estate issues generated the most passion. Landowners in the floodways pleaded for relief from purportedly unfair attempts to restrict their rights, and their appeals invariably found sympathetic ears among powerful southern lawmakers, especially Senator John Overton. Along with Representative Will Whittington, Overton carefully monitored the Corps' activities; and the Corps expended considerable energy and time to reconcile and satisfy the conflicting demands of these politicians. The new real estate plans, in turn, dramatically affected the engineering approach and demonstrated that in this country not even the desire to control nature can easily overcome the desire—the right many would say—to own land.

Property concerns always threatened basinwide planning, but new obstacles arose in the second half of the twentieth century. Concerns over preserving the environment and maintaining recreational opportunities, including hunting and fishing, raised calls for federal assistance but usually with the stipulation that states, localities, and even private organizations have a voice in planning and managing water projects. In establishing public-private sector cooperation to plan the Atchafalaya Basin's future, the National Wildlife Federation-Corps of Engineers agreement anticipated this nationwide move to decentralized natural resources planning and management. The often contentious deliberations of the Atchafalaya Basin Agency Management Group presaged debates that occurred in environmental forums around the country.

Beginning as an attempt to write an environmental impact statement using multidisciplinary public and private expertise, the Atchafalaya Basin planning process redefined and eventually improved relations among state, federal, and environmental organizations. As with other states in other situations, Louisiana no longer was simply a supplicant for federal funds but a partner of federal agencies in protecting the environment and obtaining public access in the Atchafalaya Basin. And despite the enormous expenditure of time and money on scientific and engineering studies, science and technology rarely had the last word. People in and outside Louisiana have reminded federal and state agencies that the Atchafalaya Basin is a very special place, one well worth preserving. While the technological system—the floodways—foreclose certain options for protecting the ecosystem, values other than just technological will heavily influence the basin's future.

Just as engineering plans for the basin have proven to be tentative, experimental, and subject to substantial revision, so too has the political framework in which the plans were drawn. In fact, the basin may be seen as a vast natural laboratory in which both institutional and engineering experiments have occurred and will probably continue. Its history reflects the growing complexity of planning throughout the country. Beginning in the nineteenth century with the simple premise that whoever was willing to pay for the project could have the project, planning has evolved into a consideration of natural and social consequences that can outweigh strictly economic calculations. Moreover, while Washington-level bureaucrats might wish to apply generic solutions to water resource questions, in reality local conditions always modify plans. Congress usually becomes the agent of modification, as Atchafalaya Basin development shows. Especially at the federal

level, the bureaucratic challenge is to implement policies and regulations and still remain sensitive to local conditions. It is not a new problem. Woodrow Wilson noted in 1887, "The question for us is, how shall our series of governments within governments be so administered that it shall always be to the interest of the public officer to serve, not his superior alone but the community also, with the best efforts of his talents and the soberest service of his conscience?"¹ In an age capable of employing technology to affect society and ecosystems over a vast area, the definition of "community" will likely always be controversial.

Few areas of the United States have endured as much manipulation of the natural environment as has the Atchafalaya Basin. Since 1928, the Corps has removed hundreds of thousands of cubic yards of earth from the Atchafalaya River and neighboring bayous and dumped much of it on adjacent wetlands. Meanwhile, hundreds of acres of land emerged in the lower basin where only water lay before. The impact on both the basin's ecology and economy has been significant. Since the 1950s, however, the Corps has attempted to freeze the basin in time. At Old River the Army engineers maintain a flow of water into the Atchafalaya comparable to the flow at mid-century. Moreover, in hammering out the environmental impact statements, general design memorandums, and real estate agreements in the 1970s and 1980s, public and private agencies have attempted to ensure that the flood control and navigation imperatives authorized by Congress cause as little ecological and economic degradation as possible. We attempt to rescue the basin from ourselves.

Both politically and ecologically, competition and cooperation mesh to produce a sustainable, if precarious, environment in the Atchafalaya Basin. If the laboriously created agreements regarding the basin lead to greater ecological stability, an interesting feedback might occur. Ecological stability might stimulate even greater cooperation among the resource agencies, state and federal, administering the basin. Conversely, new ecological instability could threaten old agreements and entice agencies once more to develop competing plans that reflect their own particular missions and organizational biases.

The Atchafalaya Basin can never be returned to the condition that existed before human intervention (and we cannot be certain we know what that was). Nor can it be returned even to its nineteenth century landscape, a forest laced by bayous with bars and branches enough to turn back the most skilled pilots. Today, the basin is both engineering contrivance and natural wonder. Here, as elsewhere, our ability to maintain an equilibrium between human aspirations and nature's needs

defines our humanity. If we can apply technology while cultivating ecological stability, there may be little need for apprehension. If the language of engineering can coexist with the language of place, then the basin can be both a testimony to human reason and a refuge for the human spirit.

Notes

Prologue

1. The recognition came from the National Society of Professional Engineers. See Jeff Johnston, "The Swamp Expressway," *Acadiana Profile*, 11, 4 (1984-85 Tour Guide), p. 55.
2. U.S. Army Corps of Engineers, New Orleans District, *Technical Appendixes A, B, C, and D*, vol. 2, in *Atchafalaya Basin Floodway System, Louisiana: Feasibility Study*, 4 vols. (New Orleans, January 1982), II:A-61, A-63, A-149, A-153 [hereinafter cited as *Feasibility Study*]; Johannes L. van Beek, Karen Wicker, and Benjamin Small, *A Comparison of Three Flooding Regimes, Atchafalaya Basin, Louisiana*, Ecological Research Series, EPA-600/378-106 (Las Vegas, Nevada: U.S. Environmental Protection Agency, Office or Research and Development, Environmental Monitoring and Support laboratory, 1978), p. 1; Norah Deakin Davis, *The Father of Waters: A Mississippi River Chronicle*, with photographs by Joseph Holmes (San Francisco: Sierra Club Books, 1982), p. 152; Louisiana Office of Tourism, *River Trails, Bayous and Back Roads* (Baton Rouge, n.p., n.d.), p. 75.
3. Davis, *Father of Waters*, pp. 152-53; Louisiana Office of Tourism, *River Trails*, p. 75. See also Jack and Anne Rudloe, "Trouble in Bayou Country," *National Geographic* 156, 3 (September 1979): 376-97; C. C. Lockwood, *Atchafalaya: America's Largest River Basin Swamp* (Baton Rouge: Beauregard Press, 1981), p. 8.
4. Thomas A. Becnel, *The Barrow Family and the Barataria and Lafourche Canal: The Transportation Revolution in Louisiana, 1829-1925* (Baton Rouge: Louisiana State University Press, 1989), pp. 2, 27-28.
5. Congressman Henry D. Larcade, Jr. recounted the story in testimony presented in U.S. Congress, House of Representatives, Committee on Public Works, Subcommittee on Flood Control, *Hearings on H.R. 9859*, 83d Cong., 2d sess., p. 842, 21 May 1954.
6. Louisiana Office of Tourism, *River Trails*, p. 75.
7. Information on discharge comes from the U.S. Geological Survey, Water Fact Sheet, "Largest Rivers in the United States," Open-File Report 87-242, August 1987. "Cubic feet per second" measures the amount of water passing a cross section of the river stretching from bank to bank. At a point where the river is 500 feet wide and an average 50 feet deep, the cross section is 25,000 square feet. If water passes this point at 5 feet per second, the river carries 125,000 cfs. Put another way, 937,500 gallons of water would pass an observer's eye every second (one cfs equal 7.5 gallons per second).
8. Material on the geological history of the Atchafalaya River was obtained from Rodney A. Latimer and Charles W. Schweizer, *The Atchafalaya River Study*, 3 vols. (Vicksburg, Mississippi: Mississippi River Commission, 1951-1952), I: 9, 31; Harold N. Fisk, *Geological Investigation of the Atchafalaya Basin and the Problem of Mississippi River Diversion*, 2 vols. (Vicksburg: Mississippi River Commission, 1952), I:8-9.
9. For some of the ideas relating to the rise of Republican Party ideology and its influence on natural resources development, see Robert Kelley, "The Context and the

Process: How They Have Changed Over Time," in Martin Reuss, ed., *Water Resources Administration in the United States: Policy, Practice, and Emerging Issues* (East Lansing, Michigan: American Water Resources Association and Michigan State University Press, 1993), pp. 10-22.

10. For the history of the Corps' early involvement in water resources, by far the most important book is Todd Shallat, *Structures in the Stream: Water, Science, and the Rise of the U.S. Army Corps of Engineers* (Austin: University of Texas Press, 1994). This book may be supplemented with these other works: Daniel H. Calhoun, *The American Civil Engineer: Origins and Conflicts* (Cambridge, Massachusetts: The MIT Press, 1960); Forest G. Hill, *Roads, Rails, and Waterways: The Army Engineers and Early Transportation* (Norman, Oklahoma: University of Oklahoma Press, 1957); Frank N. Schubert, ed., *The Nation Builders: A Sesquicentennial History of the Corps of Topographical Engineers, 1838-1863*, EP 870-1-37 (Fort Belvoir, Virginia: Office of History, U.S. Army Corps of Engineers, 1988).

11. The Cajun was Mamie Louviere, who was interviewed on the NOVA program *Goodbye, Louisiana*, originally broadcast on the Public Broadcasting Service on 30 November 1982; copyright 1982 by the WGBH Educational Foundation, Boston.

12. A popular and insightful account of the effect of the Old River Control Structure on the Atchafalaya and Mississippi rivers is given in John McPhee, *The Control of Nature* (New York: Farrar, Straus, Giroux, 1989), pp. 3-92.

13. Kermit L. Hebert, *The Flood Control Capabilities of the Atchafalaya Basin Floodway*, rev. ed. (Baton Rouge: Louisiana State University Press, 1973), p. 3. Hebert originally submitted this paper in partial fulfillment of the requirements of a master of science degree, and it was first published in 1967. Subsequently updated, the study remains a standard source on the subject.

Chapter I Early Flood Control Efforts, Louisiana Style

1. Thomas Hutchins, *An Historical Narrative and Topographical Description of Louisiana and West-Florida* (Gainesville, Florida: University of Florida Press, 1968, reprint of 1784 edition), p. 45.

2. Henry Marie Brackenridge, *Views of Louisiana, Together with a Journal of a Voyage Up the Missouri River, in 1811* (Chicago: Quadrangle Books, Inc., 1962, reprint of 1814 edition), p. 168. Brackenridge devoted much of his spare time to the study of Indian mounds in the Mississippi and Ohio basins. His work is described in John C. Greene, *American Science in the Age of Jefferson* (Ames, Iowa: Iowa State University Press, 1984), pp. 350-52.

3. Amos Stoddard, *Sketches, Historical and Descriptive of Louisiana* (New York City: AMS Press, 1973, reprint of 1812 edition), p. 183. Stoddard thought Upper Louisiana embraced all the land above the Arkansas River and west of the Mississippi River included in the Louisiana Purchase. Ibid., p. 205. However, definitions varied, and many people limited Upper Louisiana to the land above the mouth of Ohio, including the upper Mississippi and Missouri river basins.

4. Ibid., pp. 182-83.

5. William Darby, *The Emigrant's Guide to the Western and Southwestern States and Territories* (New York: Kirk and Mercein, 1818), p. 72.

6. William Darby, *A Geographical Description of the State of Louisiana* (Philadelphia: John Melish, 1816), p. 136. For more on William Darby, see J. Gerald

Kennedy, *The Astonished Traveler: William Darby, Frontier Geographer and Man of Letters* (Baton Rouge: Louisiana State University Press, 1981).

7. Malcolm Comeaux, *Atchafalaya Swamp Life: Settlement and Fold Occupations*, vol. II, *Geoscience and Man*, ed. Rob F. Perkins (Baton Rouge: Louisiana State University Press, 1972), II:7; Glenn R. Conrad, "New Iberia: The Spanish Years," in *New Iberia: Essays on the Town and Its People* comp. Glenn R. Conrad (Lafayette, Louisiana: Center for Louisiana Studies, University of Southwestern Louisiana, 1979), pp. 2, 25; Joe Gray Taylor, *Louisiana: A Bicentennial History* (New York: W. W. Norton & Company, Inc., 1976), p. 25; William Faulkner Rushton, *The Cajuns From Acadia to Louisiana* (New York: Farrar, Straus, Giroux, 1979), pp. 318–23; Vaughan Baker, "The Acadians in Antebellum Louisiana: A Study of Acculturation," in *The Cajuns: Essays on Their History and Culture*, ed. Glenn R. Conrad (Lafayette, Louisiana: Center for Louisiana Studies, University of Southwestern Louisiana, 1978), p. 117; Daniel Dennett, *Louisiana As It Is* (New Orleans: "Eureka" Press, 1876), p. 61; Carl A. Brasseaux, *The Founding of New Acadia: The Beginnings of Acadian Life in Louisiana, 1765–1803* (Baton Rouge: Louisiana State University Press, 1987), p. 91.

8. Taylor, *Louisiana*, p. 25; Rushton, *Cajuns*, pp. 318–23; Brasseaux, *New Acadia*, p. 91; Carl A. Brasseaux, *Acadian to Cajun: Transformation of a People, 1803–1877* (Jackson, Mississippi: University Press of Mississippi, 1992), p. 4.

9. Taylor, *Louisiana*, p. 24; Rushton, *Cajuns*, pp. 78–80; Robert W. Harrison, *Alluvial Empire. Volume One: A Study of State and Local Efforts Toward Land Development in the Alluvial Valley of the Lower Mississippi River, Including Flood Control, Land Drainage, Land Clearing, Land Forming* (Little Rock, Arkansas: Pioneer Press, 1961), I:40; Caleb G. Forshey, "The Levees of the Mississippi River," *Transactions of the American Society of Civil Engineers* (1874), 3:270–71 [hereinafter cited as *Transactions*]; Nicholas R. Spitzer, "From Riverine to the Prairies: An Introduction to Man/Land Relationships in South Louisiana," in *Mississippi Delta Ethnographic Overview*, for the National Council for the Traditional Arts, 2–40 (National Park Service, 1979), pp. 10–11; Frank H. Tompkins, *Riparian Lands of the Mississippi River: Past—Present—Prospective* (New Orleans: Frank H. Tompkins, 1901), pp. 21–22, 139–40; Lyle Saxon, *Father Mississippi* (New York: The Century Co., 1927), p. 257; Arthur DeWitt Frank, *The Development of the Federal Program of Flood Control on the Mississippi River* (New York: Columbia University Press, 1930), p. 16; Brackenridge, *Views of Louisiana*, pp. 176–78. One arpent equaled 192 feet or roughly one side of an acre.

10. Fred B. Kniffen, *Louisiana: Its Land and People* (Baton Rouge: Louisiana State University Press, 1968), p. 128; Rushton, *Cajuns*, pp. 80–81. Rushton says that Lauren Post, a geographer, made the claim about the ability to convey messages by voice.

11. Ray Brassieur, "The Atchafalaya Basin," in *Mississippi Delta Ethnographic Overview*, for the National Council for the Traditional Arts 61–94 (National Park Service), pp. 87–88; Comeaux, *Atchafalaya Swamp Life*, p. 14.

12. Brasseaux, *Acadian to Cajun*, pp. 6–9.

13. D. Gail Abbey, *Life in the Atchafalaya Swamp* (Lafayette, Louisiana: Lafayette Natural History Museum and Planetarium, 1979), pp. 2, 6, 9; Center for Archaeological Studies, University of Southwestern Louisiana, *Archeology [sic] and Ethnology on the Edges of the Atchafalaya Basin, South Central Louisiana*, Report No. PD-RD-82-04 (New Orleans: New Orleans District, U. S. Army Corps of Engineers, 1982), p. 112; Comeaux, *Atchafalaya Swamp Life*, pp. 9–14; Malcolm Comeaux, "Louisiana's Acadians: The Environmental Impact," in *The Cajuns: Essays on Their History and Culture*, ed. Glenn R. Conrad (Lafayette, Louisiana: Center for Louisiana Studies,

University of Southwestern Louisiana), pp. 142-59; Lauren C. Post, *Cajun Sketches From the Prairies of Southwest Louisiana* (Baton Rouge: Louisiana State University Press, 1974), pp. 32-37; Brasseaux, *Acadian to Cajun*, pp. 78-81.

14. Kniffen, *Louisiana*, pp. 136-38; Rushton, *Cajuns*, p. 315; Comeaux, *Atchafalaya Swamp Life*, p. 11; *Archeology and Ethnology*, p. 118. On the history of Louisiana's indigo plantations, see Jack D. L. Holmes, "Indigo in Colonial Louisiana and the Floridas," *Louisiana History* 8, No. 4 (fall 1967): 329-49.

15. Comeaux, *Atchafalaya Swamp Life*, pp. 14-15; *Archeology and Ethnology*, pp. 112-14; J. Carlyle Sitterson, *Sugar Country: The Cane Sugar Industry in the South, 1753-1950* (Lexington, Kentucky: University of Kentucky Press, 1953), pp. 14-16; Gladys Calhoon Case, *The Bayou Chene Story. A History of the Atchafalaya Basin and Its People* (Detroit: The Harlo Press, 1973), pp. 41-48; Timothy Flint, *Recollections of The Last Ten Years, Passed in Occasional Residences and Journeyings in The Valley of the Mississippi* (New York: Da Capo Press, 1968, reprint of 1826 edition), pp. 325-26.

16. Anonymous, "Terrebonne Parish, Louisiana," *The Commercial Review of the South and West*, ed. J. D. B. De Bow, new series, vol. 2 (1850): 147. For an interesting description of life both on the plantations and in the bayous in the early nineteenth century, see Liliane Crété, *Daily Life in Louisiana, 1815-1830*, trans. Patrick Gregory (Baton Rouge: Louisiana State University Press, 1981), pp. 252-85.

17. Merl Reed, "Boom or Bust—Louisiana's Economy During the 1830's," *Louisiana History* 4 (1963): 37.

18. Maurine Bergerie, *They Tasted Bayou Water: A Brief History of Iberia Parish* (New Orleans: Pelican Publishing Co., 1962), p. 68; Harnett T. Kane, *The Bayous of Louisiana* (New York: William Morrow & Co., 1943), pp. 161-62.

19. Carl A. Brasseaux, "New Iberia's Steamboat Days," in *New Iberia: Essays on the Town and its People*, comp. Glenn R. Conrad (Lafayette, Louisiana: Center for Louisiana Studies, University of Southwestern Louisiana, 1979), pp. 210-11; *Archeology and Ethnology*, pp. 115-16; Louis Hunter, *Steamboats on the Western Rivers* (Cambridge, Massachusetts: Harvard University Press, 1949), p. 167.

20. Brasseaux, "Steamboat Days," p. 213.

21. Ibid.; *Archeology and Ethnology*, p. 116.

22. Kane, *Bayous of Louisiana*, pp. 162-63.

23. Reed, "Boom or Bust," p. 38; Becnel, *The Barrow Family and the Barataria and Lafourche Canal*, pp. 41-65.

24. Brasseaux, "Steamboat Days," p. 215.

25. The length of the Atchafalaya raft is a subject of some dispute. This figure is from Malcolm Comeaux, "The Atchafalaya River Raft," *Louisiana Studies* 9, No. 4 (winter 1970): 217.

26. Ibid., p. 218; Darby, *A Geographical Description of the State of Louisiana*, p. 65; James Pitot, *Observations on the Colony of Louisiana from 1796 to 1802*, translated and introduced by Henry C. Pitot (Baton Rouge: Louisiana State University Press, 1979), p. 131.

27. Comeaux, "The Atchafalaya River Raft," pp. 219-20; Timothy Flint, *A Condensed Geography and History of the Western States, or The Mississippi Valley*, 2 vols. (Cincinnati: E. H. Flint, 1828), I:532.

28. Darby, *Emigrant's Guide*, p. 52; Enoch Humphreys, "Lt. Enoch Humphreys to Lt. Col. Constant Freeman, Secretary of War," Letters received, 15 December 1805. The quotations from Darby and Humphreys are as cited in Comeaux, "The Atchafalaya River Raft," p. 220.

29. Shallat, *Structures in the Stream*, p. 144. For more on Shreve, see *ibid.*, pp. 144-48; Edith McCall, *Conquering the Rivers: Henry Miller Shreve and the Navigation of America's Inland Waterways* (Baton Rouge: Louisiana State University Press, 1984).
30. Comeaux, "The Atchafalaya River Raft," p. 249; D. O. Elliott, *The Improvement of the Lower Mississippi River for Flood Control and Navigation*, 3 vols. (Vicksburg, Mississippi: U.S. Waterways Experiment Station, 1932), I:51.
31. U.S. Congress, House of Representatives, Committee on Commerce, "Atchafalaya River," 25 Cong., 2d sess., 19 March 1838, War Department Doc. 253. Report of Captain William Chase to General Charles Gratiot, Washington, D.C., 12 March 1838.
32. *Ibid.*
33. Stoddard, *Sketches of Louisiana*, p. 167.
34. Latimer and Schweizer, *Atchafalaya River Study*, I:10; B. B. Simms (resident on the Atchafalaya River from 1840 to 1870) to General M. Jeff Thompson, Chief State Engineer, New Orleans, 12 January 1874 (copy) in the file, "Atchafalaya Raft as Affecting Floods on the Lower Mississippi River," compiled under the direction of Major Clarke S. Smith, Box 49, Entry 522, Record Group 77, U.S. Army Corps of Engineers, National Archives and Records Administration [hereinafter cited as NARA], Washington, D.C.
35. Louisiana Department of Public Works, *First Progress Report of the State of Louisiana Department of Public Works, 1 January 1940 to 31 December 1941*, (Baton Rouge: 1941), p. 16.
36. This description is based on that given by Leland Johnson, *The Falls City Engineers: A History of the Louisville District Corps of Engineers, United States Army* (Louisville, Kentucky: Louisville District, U. S. Army Corps of Engineers, 1975), p. 77; See also McCall, *Conquering the Rivers*, pp. 180-88.
37. P. O. Hébert, *Annual Report of the State Engineer to the Legislature of the State of Louisiana* (February 1846), pp. 3-4. [Except as otherwise noted, the state engineer reports used for this history are located in the Louisiana Collection of the Howard-Tilton Memorial Library, Tulane University, New Orleans.]
38. George T. Dunbar, *Annual Report of the State Engineer, to the Legislature of the State of Louisiana* (January 1843), p. 7.
39. P. O. Hébert, *Annual Report of P. O. Hébert, State Engineer, to the Legislature* (January 1847), pp. 9-10. Folder 5, Entry 486, "Paul O. Hébert Pamphlets, 1845-1875," Manuscripts Department, Special Collections, Howard-Tilton Memorial Library, Tulane University, New Orleans. [Hereinafter cited as Hébert Pamphlets.] Details on Hébert's life are from Mrs. Eugene Soniat-Du-Fossat, *Biographical Sketches of Louisiana's Governors from D'Uberville to Foster By a Louisianaise, as A Contribution to the Exhibit of Woman's Work, in the Louisiana State Department, at the World's Industrial and Cotton Centennial Exposition, New Orleans, La., 1884-85* (Baton Rouge: The Advocate, Book and Job Office, 1893), p. 38.
40. A. D. Wooldridge, *Report of the Internal Improvements of Louisiana*, by A. D. Wooldridge, *State Engineer* (New Orleans, January 1850), pp. 14-15. The quotations are from page 14. In its emphasis on outlets, Wooldridge's report is similar to that presented by H. Harrison in 1828. However, Harrison's report did not seem to get much attention. See H. Harrison, *Improvement of the Mississippi; Offering a Plan for the Reduction of Its Overflow, and Of that Of Its Alluvial Tributary Streams* (Cincinnati: George T. Williamson, 1828), pp. 24-26.
41. George W. Morse, *Annual Report of the State Engineer to the Legislature of the State of Louisiana*, (New Orleans, January 1855), p. 14.

42. Louis Hébert, *Annual Report of the State Engineer to the Legislature of the State of Louisiana* (January 1859), p. 19; *ibid.*; *Special Report of the State Engineer on Bayou Cut-Off, to the Legislature of the State of Louisiana* (Baton Rouge, February 1859), p. 6; Elliot, *Improvement of the Lower Mississippi River*, p. 51.
43. Hébert, *Special Report of the State Engineer on Bayou Cut-Off*, p. 6.
44. *Ibid.*
45. Louis Hébert, *Special Report of the State Engineer, on System of Internal Improvements, to the Legislature of the State of Louisiana*, 1857, p. 21.
46. Hébert, *Special Report of the State Engineer on Bayou Cut-Off*, p. 7.
47. Dunbar, *Annual Report of the State Engineer* (January 1843).
48. Paul Hébert, *Annual Report of P. O. Hébert, State Engineer* (January 1847), p. 3, Hébert Pamphlets.
49. *Ibid.*, pp. 4-6.
50. Henry T. Williams, *Annual Report of H. T. Williams, State Engineer, to the Legislature* (New Orleans, January 1848), p. 28.
51. *Ibid.*, p. 3.
52. George W. Morse, *Annual Report of the State Engineer to the Legislature of the State of Louisiana* (1853), p. 11.
53. Morse, *Annual Report of the State Engineer* (for 1853 and 1854), p. 5.
54. P. O. Hébert, *Annual Report of P. O. Hébert, State Engineer* (January 1847), p. 3, Hébert Pamphlets.
55. *Ibid.*, p. 14.
56. Williams, *Annual Report of H. T. Williams*, p. 46.
57. Morse, *Annual Report of the State Engineer* (1854), p. 10.
58. Louis Hébert, *Annual Report of the State Engineer to the Legislature of the State of Louisiana* (January 1856), p. 9.
59. *Ibid.*
60. Sitterson, *Sugar Country*, pp. 20-23.
61. Malcolm J. Rohrbough, *The Land Office Business: The Settlement and Administration of American Public Lands, 1789-1837* (New York: Oxford University Press, 1968), pp. 160-68.
62. As quoted in George Graham to Richard Rush, General Land Office, 8 January 1829, GLO: Division "C," Miscellaneous Letters sent, vol. 23, Record Group 49, General Land Office, NARA, Washington, D.C. Graham's report was sent to the Speaker of the House on 15 January 1829 and is printed in *American State Papers: Documents, Legislative and Executive of the Congress of the United States, in Relation to the Public Lands* (Washington, D.C., Duff Green, 1834), 5:207-210, No. 658.
63. Rohrbough, *Land Office Business*, p. 159.
64. Graham to Rush, 8 January 1829. Graham's report was thoroughly discussed in the article, "West Bank Spillway Plan for Louisiana First Given to Congress Century Ago" that appeared in the 2 November 1934 edition of the *New Orleans Times-Picayune*.
65. *Ibid.*
66. *Ibid.*
67. *American State Papers: The Public Lands*, 5:213, No. 673, "Application of Louisiana for a Cession of the Public Lands Within Her Limits," communicated to the Senate on 26 January 1829.
68. *American State Papers: The Public Lands*, 5:327-328, No. 686, "Application of Louisiana for a Cession of the Public Lands Within Her Limits, and a Grant to Aid

in Constructing a Canal," communicated to the House of Representatives on 10 February 1829.

69. Ibid., quotation from *American State Papers, The Public Lands*, 5:360, No. 706, "Provision for Making Embankments, Bridges, and Roads, On the Public Lands in Louisiana," communicated to the Senate on 12 January 1830.

70. *American State Papers: The Public Lands*, 5:328, No. 686. Emphasis is in the original.

71. Rohrbough, *Land Office Business*, pp. 200-05.

72. Harrison, *Alluvial Empire*, pp. 69-70; Benjamin G. Humphreys, *Floods and Levees of the Mississippi River* (Washington, D.C.: The Mississippi River Levee Association, 1914), pp. 29-31; Frank, *Flood Control on the Mississippi River*, pp. 18-19.

73. Ibid. Estimates on the cost of the levees vary. The General Land Office in Washington thought \$8 million had been spent. Benjamin Horace Hibbard in *A History of Public Land Policy* (New York: Macmillan Co., 1924) estimated the expenditure at \$20 million.

74. *Acts of Congress*, 30 Cong., 1st sess., (1849), p. 41. The entire act is given in Rachael Edna Norgress, "The History of the Cypress Lumber Industry in Louisiana," *The Louisiana Historical Quarterly* 30, No. 3 (July 1947): 986-87.

75. Ibid. John Wilson, who had a lengthy career with the General Land Office, went to Louisiana in 1850 to consult with state officials and to make recommendations about the steps required to select the swamplands. In his report back to Congress, he suggested that the Mississippi's channel be straightened and that new levees, higher and wider than the existing ones, be built farther back from the river. At the same time, he advocated that the natural outlets of the river be kept open to help relieve the Mississippi of floodwater. However, he realized that such a system was beyond the state's financial means and advised that additional taxes would have to be raised. See Paul W. Gates, *History of Public Land Law Development* (Washington, D.C.: Zenger Publishing Co., 1968), pp. 322-23.

76. Norgress, "Cypress Lumber Industry," pp. 987-88.

77. Harrison, *Alluvial Empire*, p. 68.

78. Ibid., pp. 70-71. Soon after the passage of the second swamp act, the General Land Office commissioner proposed that the states either accept the notes of a government survey as the basis for swamp land designation or else appoint their own agents. Louisiana chose the latter method, thereby ensuring state control over the surveying. See Sam Mims, "Louisiana's Administration of Swamp Land Funds," *Louisiana Historical Quarterly* 28, No. 1 (January 1945): 291.

79. Wooldridge, *Internal Improvements of Louisiana*, p. 10.

80. Harrison, *Alluvial Empire*, pp. 77-78.

81. Copies of this report and of many of the accompanying reports are available in docs. 409 and 410, Drawer A-9 (1896-1916), Technical Records, Mississippi River Commission Library, Vicksburg, Mississippi [hereinafter cited as MRC]. They are printed in two volumes under the title "Mississippi River Commission. Office of the Secretary, April 1913. Extracts From Early Reports in Possession of the Louisiana State Board of Engineers." The quotation is taken from page 32 of the copied report. Emphasis is in the original. There were sharp divisions among the committee members and the engineers about this recommendation and many others. Professor Caleb Forshey, one of the best informed and most industrious engineers, was convinced that levees alone could control the Mississippi's waters. In this, he anticipated the major conclusion of Humphreys and Abbot in their *Physics and Hydraulics of the Mississippi*

River (1861), which will be discussed in the next chapter. See also Harrison, *Alluvial Empire*, p. 78.

82. *Ibid.*, p. 34.

83. On the history of this survey, see Martin Reuss, "Andrew A. Humphreys and the Development of Hydraulic Engineering: Politics and Technology in the Army Corps of Engineers, 1850-1950," *Technology and Culture* 26, 1 (January 1985): 1-33.

84. U.S. Congress, Senate, 32d Cong., 1st sess., 21 January 1852, Executive Doc. 49. Ellet's report was subsequently published along with an early one dealing with the Ohio River. See Charles Ellet, Jr., *The Mississippi and Ohio Rivers: Containing Plans For The Protection Of The Delta From Inundation; Investigations Of The Practicability And Cost Of Improving The Navigation Of The Ohio And Other Rivers By Means Of Reservoirs With An Appendix On The Bars At the Mouths Of The Mississippi* (Philadelphia: Lippincott, Grambo, And Co., 1853), pp. 17-224.

85. Ellet, *Mississippi and Ohio Rivers*, p. 223.

86. *Ibid.*, p. 224.

87. Harrison, *Alluvial Empire*, p. 72; see also Mims, "Louisiana's Administration of Swamp Land Funds," pp. 285-86.

88. Harrison, *Alluvial Empire*, p. 78.

89. *Ibid.*, p. 74; Mims, "Louisiana's Administration of Swamp Land Funds," pp. 286-89.

90. Norgress, "Cypress Lumber Industry," pp. 990-91. Governor Paul Hébert later made the point that "if the Commissioners of the Board of Swamp Lands depend upon the sufferage of the people for their election, they would apply funds to those portions of their respective Districts which were the most populous and not to those in which they were most necessary." Quoted in Harrison, *Alluvial Empire*, p. 79.

91. Quoted in Harrison, *Alluvial Empire*, p. 78.

92. Quoted in *ibid.*, p. 79.

93. Frank M. Kerr, Chief State Engineer, *Compendium of Legislative Acts Relating to Levee Organization and Kindred Subjects, 1856-1918* (New Orleans: A. W. Hyatt, 1919), sess. of 1861, Act No. 261, p. 66; Mims, "Louisiana's Administration of Swamp Land Funds," pp. 293-94, 298-99.

94. Harrison, *Alluvial Empire*, pp. 83-84.

95. For a reprint of part of this law, see Andrew A. Humphreys and Henry L. Abbot, *Report Upon The Physics And Hydraulics Of The Mississippi River; Upon The Protection Of The Alluvial Region Against Overflow; Upon The Deepening Of The Mouths: Based Upon Surveys And Investigations Made Under the Acts Of Congress Directing The Topographical And Hydrographical Survey Of The Delta Of The Mississippi River, With Such Investigations As Might Lead To Determine The Most Practicable Plan For Securing It From Inundation, And The Best Mode Of Deepening The Channels At the Mouths Of The River*, Professional Papers of the Corps of Topographical Engineers, U.S. Army, No. 13 (Washington, D.C.: Government Printing Office, 1876, reprint, with additions of Professional Paper No. 4, 1861), pp. 154-58.

96. Cited in J. P. Kemper, *Rebellious River* (Boston: Bruce Humphries, Inc., 1949), p. 112.

Chapter 2

Interregnum: Growing Federal Involvement

1. For more on Republican party ideology, see Robert Kelley, "Ideology and Political Culture from Jefferson to Nixon," *The American Historical Review* 82 (June 1977): 531-62.

2. For the history of early efforts to eliminate the bars at the Mississippi's mouth, see the excellent dissertation by Walter M. Lowrey, "Navigational Problems at the Mouth of the Mississippi River, 1698-1880" (Ph.D. dissertation, Vanderbilt University, 1956); Reuss, "Andrew A. Humphreys and the Development of Hydraulic Engineering," pp. 15-16; Elliott, *Improvement of the Lower Mississippi River*, I:110.

3. Humphreys and Abbot, *Physics and Hydraulics of the Mississippi River*, p. 445. Emphasis is in the original.

4. *Ibid.*, pp. 446-47.

5. *Ibid.*, p. 459.

6. *Ibid.*, p. 458.

7. *Ibid.*, p. 461.

8. *Ibid.*, p. 472.

9. *Ibid.*, p. 405.

10. For the early history of this railroad, see especially Walter Prichard, ed., "A Forgotten Louisiana Engineer: G. W. R. Bayley and his 'History of the Railroads of Louisiana,'" *The Louisiana Historical Quarterly* 30, No. 4 (October 1947): 1069-79. See also James P. Baughman, *Charles Morgan and the Development of Southern Transportation* (Nashville: Vanderbilt University Press, 1968), pp. 97-103, 177.

11. A description of the perils of navigating through the Atchafalaya Bay is given in U.S. Congress, Senate, *Report of the Secretary of War, In Compliance With A resolution of the Senate of the 13th instant, calling for information relative to the bar in the Atchafalaya river*, 34th Cong., 1st sess., 24 March 1856, Executive Doc. 50.

12. *Archeology and Ethnology*, p. 125. For the early history of Morgan City, see also R. Christopher Goodwin, Jill-Karen Yakubik, Galloway W. Selby, and Kenneth R. Jones (R. Christopher Goodwin & Associates, Inc.), *Cultural Resources Survey of the Morgan City and Vicinity Hurricane Protection Project*, Report No. COELMN/PD-85/05 (New Orleans: New Orleans District, U.S. Army Corps of Engineers, 1985), pp. 32-64.

13. *Archeology and Ethnology*, p. 125; Brasseaux, "Steamboat Days," p. 214; Baughman, *Charles Morgan*, pp. 99-101.

14. *Annual Report of the Chief of Engineers* [hereinafter cited as ARCE], 1910, I:388.

15. For early (1830s) descriptions of Atchafalaya Basin towns, see Walter Prichard, ed., "Some Interesting Glimpses of Louisiana A Century Ago," *The Louisiana Historical Quarterly* 24, No. 1 (January 1941): 35-42.

16. For more on Civil War activities in the Atchafalaya Basin, see Morris Raphael, *The Battle in the Bayou Country* (Detroit: Harlo Press, 1975); Barnes F. Lathrop, "The Lafourche District in 1861-1862: A Problem in Local Defense," *Louisiana History* 1, No. 2 (spring 1960): 99-129; Barnes F. Lathrop, "The Lafourche District in 1862: Invasion," *Louisiana History* 2, No. 2 (spring 1961): 175-201; Edwin C. Bearss, "The Civil War Comes To The Lafourche," *Louisiana Studies* 5, No. 2 (summer 1966): 97-155; *Archeology and Ethnology*, pp. 125-35.

17. *Archeology and Ethnology*, pp. 135-36; Sitterson, *Sugar Country*, pp. 208-15; Roger W. Shugg, *Origins of Class Struggle in Louisiana: A Social History of White*

Farmers and Laborers during Slavery and After, 1840–1875, paperback edition (Baton Rouge: Louisiana State University Press, 1968), pp. 192–95.

18. Taylor, *Louisiana*, p. 126; Shugg, *Origins of Class Struggle in Louisiana*, p. 248; Brasseaux, *Acadian to Cajun*, pp. 78–80; John Alfred Heitmann, *The Modernization of the Louisiana Sugar Industry, 1830–1910* (Baton Rouge: Louisiana State University Press, 1987), pp. 49–50.

19. Taylor, *Louisiana*, pp. 126–27; Shugg, *Origins of Class Struggle in Louisiana*, pp. 244–46, 250.

20. The estimate of the increase in rice production is based on a table in Mildred Kelly Ginn, “A History of Rice Production in Louisiana to 1896,” *The Louisiana Historical Quarterly* 23, 2 (April 1940): 584. Besides Ginn’s article, see also Edwin Adams Davis, *Louisiana: A Narrative History* (Baton Rouge: Claitor’s Book Store, 1961), pp. 295–97; Taylor, *Louisiana*, pp. 129–30.

21. Quoted in Harrison, *Alluvial Empire*, p. 87.

22. Kerr, *Legislative Acts*, pp. 73 and 75, sess. 1866, Acts No. 20 and 135.

23. *Memorial From the Board of Levee Commissioners of the State of Louisiana, In Behalf of the People of Said State, to the Congress of the United States, Asking National Aid and Assistance in the Reconstruction of Levees on the Mississippi River*, New Orleans: New Orleans “Times” Book and Job Office, 1866, p. 4, Box 2615, Record Group 77, NARA, Fort Worth, Texas.

24. *Ibid.*, p. 7.

25. *Memorial of the People of Louisiana To the President and the Congress of the United States*, New Orleans: Paul J. Christian & Co., 1866, Box 2615, Record Group 77, NARA, Fort Worth, Texas.

26. *Ibid.*, p. 4.

27. U.S. Congress, House of Representatives, *Laws of the United States Relating to the Improvement of Rivers and Harbors From August 11, 1790, to June 29, 1938*, 3 vols. (Washington, D.C.: Government Printing Office, 1940), I:152, 163, 167–68, 175, Acts of 23 June 1866, 2 March and 29 March 1867, and 25 July 1868.

28. Stanton to Humphreys, War Department, 11 December 1865, p. 20, vol. 100, Andrew A. Humphreys Papers, Historical Society of Pennsylvania, Philadelphia, Pennsylvania.

29. *Memorial From the Board of Levee Commissioners*, pp. 3–4, Box 2615, Record Group 77, NARA, Fort Worth, Texas. The Humphreys quotation comes from Albert E. Cowdrey, *Land’s End. A History of the New Orleans District, U.S. Army Corps of Engineers, and Its Lifelong Battle with the Lower Mississippi and Other Rivers Wending Their Way to the Sea* (New Orleans: New Orleans District, U.S. Army Corps of Engineers, 1977), p. 24.

30. “Letter of the Secretary of War Communicating an Answer to a Resolution of the Senate of June 11, 1866, a Copy of General Humphreys’ Report to the War Department on the Levees of the Mississippi,” 40th Cong., 1st sess., Executive Doc. 8. Reprinted in U.S. Congress, House of Representatives, Committee on Flood Control, 70th Cong., 1st sess., 1928, Com. Doc. 17.

31. Congress did make one contribution. It authorized the Army, through the Freedmen’s Bureau, to distribute rations—one bushel of corn and eight pounds of pork per month per person, emergency fuel, temporary shelter, and medical care. Occasionally, the bureau even issued seed to flood victims to begin new crops. Aid was given to both blacks and poor whites. See Leland Johnson, “Emergency Response: The Army Engineer Disaster Relief Mission. Origins to 1850” (unpublished manuscript,

Office of History, Headquarters, U.S. Army Corps of Engineers, Alexandria, Virginia) [hereinafter cited as OH HQUSACE].

32. Cowdrey, *Land's End*, p. 24.
33. Harrison, *Alluvial Empire*, p. 87; Kerr, *Legislative Acts*, p. 77, sess. 1967, Act No. 115.
34. Taylor, *Louisiana*, p. 108.
35. Kerr, *Legislative Acts*, p. 81, sess. 1963, Act No. 72. The quotations are as cited in Mims, "Louisiana's Administration of Swamp Land Funds," p. 299.
36. Mims, "Louisiana's Administration of Swamp Land Funds," p. 299; Kerr, *Legislative Acts*, p. 97, sess. 1871, Act No. 7; Harrison, *Alluvial Empire*, p. 140. The development of public works projects must be placed in the context of the generally corrupt and confusing Reconstruction government of Louisiana. For more on this, see Ted Tunnell, *Crucible of Reconstruction: War, Radicalism, and Race in Louisiana, 1862–1877* (Baton Rouge: Louisiana State University Press, 1984).
37. Cited in Mims, "Louisiana's Administration of Swamp Land Funds," p. 308.
38. *Ibid.*
39. Kerr, *Legislative Acts*, p. 98, sess. 1971, Act No. 27.
40. *Report of the Commission of Persons On the Levees of Louisiana to the General Assembly of Louisiana For the Year 1872* (New Orleans, 1872), pp. 3–4, Folder 6, Entry 486, Hébert Pamphlets.
41. *Ibid.*, p. 7.
42. *Ibid.*
43. *Report of the Commission of Levee Engineers To January 1, 1873* (New Orleans, 1873), p. 3, Folder 6, Entry 486, Hébert Pamphlets.
44. *Ibid.*, pp. 5, 8.
45. *Ibid.*, p. 46.
46. *Ibid.*, pp. 38–39.
47. *Ibid.*, p. 42.
48. *Ibid.*, p. 44.
49. Harrison, *Alluvial Empire*, p. 87.
50. Mims, "Louisiana's Administration of Swamp Land Funds," p. 310.
51. *Ibid.*, pp. 309–10.
52. *Ibid.*, pp. 305–07; Kerr, *Legislative Acts*, p. 139, sess. 1879, Act No. 33.
53. Kerr, *Legislative Acts*, pp. 181–82, sess. 1890, Act No. 97; "History of the Atchafalaya Basin Levee District," one page, Atchafalaya Basin Levee District, Port Allen, Louisiana. This act, along with Act 97 of the same year, which created the Pontchartrain Levee District, was challenged in the Louisiana courts because it authorized the levee district to raise money through special assessments on acreage and produce beyond the taxes authorized in the 1879 Louisiana State Constitution. However, the Supreme Court of Louisiana decided that these local assessments were legal since they were not an exercise of the taxing power. See *Munson et al. v. Board of Commissioners*, 43 Louisiana 15–33 (January 1891).
54. Quoted in Mims, "Louisiana's Administration of Swamp Land Funds," p. 311.
55. Harrison, *Alluvial Empire*, pp. 146–47.
56. *Ibid.*, p. 147; Elliott, *Improvement of the Lower Mississippi River*, I:11–13; House, *Laws Relating to the Improvement of Rivers and Harbors to 1938*, I:226. Act of 22 June 1875; Floyd M. Clay, *A Century on the Mississippi. A History of the Memphis District, U. S. Army Corps of Engineers, 1876–1976* (Memphis: Memphis District, U.S. Army Corps of Engineers, 1976), p. 17; Martin Reuss, *Army Engineers in Memphis*

District: A Documentary Chronicle (Memphis: Memphis District, U.S. Army Corps of Engineers, 1982), p. xv.

57. Elliott, *Improvement of the Lower Mississippi River*, I:12.

58. For more on Eads and the jetties, see Reuss, "Andrew A. Humphreys and the Development of Hydraulic Engineering," pp. 15–24; and John M. Barry, *Rising Tide: The Great Mississippi Flood of 1927 and How It Changed America* (New York: Simon & Schuster, 1997), pp. 55–92.

59. Elliott, *Improvement of the Lower Mississippi River*, I:13.

60. House, *Laws Relating to the Improvement of Rivers and Harbors to 1938*, I:304–05. "An Act to Provide for the Appointment of a 'Mississippi River Commission' for the Improvement of Said River from the Head of the Passes Near its Mouth to its Headwaters," 46th Cong., 1st sess., 33 U.S.C. 641–47.

61. For a concise explanation of the founding of the Mississippi River Commission, see Albert E. Cowdrey, *This Land, This South: An Environmental History* (Lexington, Kentucky: The University Press of Kentucky, 1983), pp. 120–22.

62. Constitution of the State of Louisiana, adopted in Convention, at the City of New Orleans, 23 July 1879; *Munson et al. v. Board of Commissioners*.

63. Harrison, *Alluvial Empire*, p. 89; Bennett H. Wall, ed., *Louisiana: A History* (Arlington, Illinois: The Forum Press, Inc., 1984), pp. 219–22; Taylor, *Louisiana*, pp. 133–35. The term "Bourbon" originates from the name of the French royal family which, according to Taylor, "never learned anything and never forgot anything." In Louisiana, as elsewhere in the South, it describes the reactionary, racist Democrats who governed until approximately the turn of the century. See Taylor, *Louisiana*, p. 133.

64. ARCE, 1881, III:2734–35, MRC report of Brevet Brigadier General Quincy A. Gillmore, Benjamin M. Harrod, and Major Charles R. Suter, Henry Mitchell, and James B. Eads, 17 February 1880. For a description of the construction of permeable dikes and observations on Eads' early influence on MRC activities, see the Robert S. Taylor testimony, also an early MRC member, in U.S. Congress, Senate, *Report on the Mississippi River Floods By the Committee on Commerce, United States Senate, Pursuant to Senate Resolution No. 176, Fifty-Fifth Congress, 55th Cong., 3d sess., 1898*, p. 2734, 4 February 1898. For an excellent explanation of early work done by the Mississippi River Commission, read Robert S. Taylor, *The Improvement of the Mississippi River. An Address Delivered at St. Louis, Mo., January 26, 1884* (St. Louis: R. P. Studley & Co., 1884).

65. Reuss, *Army Engineers in Memphis District*, p. xvi. In an appendix to his *Life on the Mississippi*, Mark Twain reprinted a first-hand account of the 1882 flooding. The observer, Edward Atkinson, described the inundation of Turnbull Island and of plantations in the region. He wrote, "The current running down the Atchafalaya was very swift, the Mississippi showing a predilection in that direction, which needs only to be seen to enforce the opinion of that river's desperate endeavors to find a short way to the Gulf." Atkinson's observations were originally printed in the *New Orleans Times-Democrat*, 29 March 1882. See Mark Twain, *Life on the Mississippi*, Bantam Classic Edition (New York: Bantam Books, 1981), p. 289.

66. Ibid.

67. Bergerie, *They Tasted Bayou Water*, pp. 70–71.

68. Prichard, "A Forgotten Louisiana Engineer," pp. 1069–79; Baughman, *Charles Morgan*, pp. 97–103, 127, 149–59; Merl E. Reed, *New Orleans and the Railroads: The Struggle for Commercial Empire, 1830–1860* (Baton Rouge: Louisiana State University Press, 1966), p. 120; *Archeology and Ethnology*, p. 124–25, 147.

69. Norgress, "Cypress Lumber Industry," pp. 994–98.

70. Ibid., pp. 1007–17; Anna C. Burns, "Frank B. Williams, Cypress Lumber King," *Journal of Forest History* 24 (July 1980): 127–33; Taylor, *Louisiana*, p. 124. For an early assessment of the timber value of the lower Atchafalaya Basin, see Walter Prichard, Fred B. Kniffen, and Clair A. Brown, eds., "Southern Louisiana and Southern Alabama in 1819: The Journal of James Leander Cathcart," *The Louisiana Historical Quarterly* 28 (July 1945): 735–921.

71. E. Merton Coulter, *The South During Reconstruction, 1865–1877* (Baton Rouge: Louisiana State University Press, 1947), p. 248; Brasseaux, "Steamboat Days," p. 214; Dennett, *Louisiana As It Is*, p. 39.

72. The history of the Atchafalaya Ship Channel can be found in the following sources: ARCE, 1910, I:529; ARCE, 1912, I:683–84; ARCE, 1920, I:982–83; Baughman, *Charles Morgan*, p. 176; U.S. Congress, House of Representatives, Committee on Rivers and Harbors, *Hearings*, 58th Cong., 2d sess., 1904, pp. 325–32; correspondence to be found in Box 114, "Atchafalaya Ship Channel, 1909–10," Accession 76A-1429, and Box 111, "Atchafalaya River Channel," Accession 76A-1429, Record Group 77, NARA, Fort Worth, Texas. For more on the Corps' work on an intracoastal canal before World War I, see Becnel, *The Barrow Family and the Barataria and Lafourche Canal*, pp. 140–47; Lynn M. Alperin, *History of the Gulf Intracoastal Waterway*, National Waterways Study Report NWS-83-9 (Fort Belvoir, Virginia: U.S. Army Corps of Engineers Institute for Water Resources, 1983), pp. 21–28.

Chapter 3

The Outlet Question

1. ARCE, 1881, III:2771, report of Committee on Levees and Outlets (Mr. Harrod and Major Suter), November 1880.

2. Ibid.

3. Ibid.; ARCE, 1881, II:1389, report of Major W. H. H. Benyaurd to Brigadier General H. G. Wright, Chief of Engineers.

4. ARCE, 1881, III:2772, report of Committee on Levees and Outlets (Harrod and Suter).

5. Ibid.

6. Dated 12 April 1882, Eads' dissent is in ARCE, 1882, III:2766–80. The dispute can be traced in the scrapbook of newspaper clippings that Benjamin M. Harrod, a commission member, kept. The scrapbook is now in Entry 253, Benjamin M. Harrod Collection, Special Collections, Howard-Tilton Memorial Library, Tulane University, New Orleans. Copies of some of the pertinent records are in File 851/e. b., "The Atchafalaya River" (editorials of B. M. Harrod and J. B. Eads), Technical Records, MRC. Most of the letters pertaining to the Atchafalaya involve exchanges of views between Harrod and Eads. In a couple of his letters, Eads also gives his reasons for resigning from the commission. See especially Eads' letter dated 2 November 1884. See also Reuss, "Andrew A. Humphreys and the Development of Hydraulic Engineering," p. 26; Elliott, *Improvement of the Lower Mississippi River*, I:16.

7. See the Harrod Collection at the Howard-Tilton Memorial Library, Tulane University, New Orleans, for some of the *New Orleans Times-Picayune* letters.

8. House, *Laws Relating to the Improvement of Rivers and Harbors to 1938*, I:382. Act of 2 August 1882. This law was passed over a presidential veto.

9. John Evens to First Lieutenant Smith D. Leach, Secretary of the MRC, St. Louis, 15 June 1883, MRC Technical Record A-14, "Investigation of the Atchafalaya to Determine Rate of Enlargement from Head of River to Butte La Rose," Vicksburg.
10. Ibid.
11. Ibid.; *Archeology and Ethnology*, pp. 124-25; Brasseaux, "Steamboat Days," p. 214; Baughman, *Charles Morgan*, pp. 99-101; ARCE, 1910, I:388.
12. Evens to Leach, "Investigation of the Atchafalaya."
13. ARCE, 1885, IV:2825-26.
14. Ibid., IV:2826-27.
15. Ibid., IV:2827-33.
16. ARCE, 1884, IV:2419-20.
17. ARCE, 1885, IV:2560-63; Elliott, *Improvement of the Lower Mississippi River*, II:314; Latimer and Schweizer, *Atchafalaya River Study*, I:10.
18. ARCE, 1885, IV:2560-63.
19. Ibid., IV:2565-69.
20. ARCE, 1888, IV:2295-2300; Latimer and Schweizer, *Atchafalaya River Study*, I:10-11; House, *Laws Relating to the Improvement of Rivers and Harbors to 1938*, I:460 and 512. Rivers and Harbors Acts of 5 August 1886 and 31 July 1888, respectively.
21. ARCE, 1888, IV:2308-11, W.G. Price, Assistant Engineer, to Kingman, 31 May 1888. All the quotations are on p. 2310.
22. ARCE, 1890, IV:3336-38, W.G. Price, Assistant Engineer, to Kingman, 31 May 1890; ARCE, 1897, V:3772-73; Latimer and Schweizer, *Atchafalaya River Study*, I:10.
23. ARCE, 1892, IV:2897-98; ARCE, 1897, V:3772-73; Latimer and Schweizer, *Atchafalaya River Study*, I:11.
24. Elliott, *Improvement of the Lower Mississippi River*, I:112.
25. Testimony reprinted in Humphreys, *Floods and Levees of the Mississippi River*, p. 224.
26. Ibid., p. 253.
27. Ibid., p. 269. Comstock and Suter had disagreed on various points of hydraulic theory for several years. In 1885, Suter, who was ill and could not prepare a report himself, instructed Mr. T. T. Johnston, an assistant to the committee on levees and outlets of the MRC, to prepare a report that sharply disagreed with Comstock's views on the effect of overflow on river velocity. Comstock had argued that it was fallacious to assume that overflow would result in decreased velocity of river water. He suggested that the slope of the bed was far more important in determining velocity. Using various river gauge readings, Suter and Johnston were able to show rather convincingly that velocity did usually decrease once the water topped the levees, and this happened independently of considerations of slope. See ARCE, 1885, IV:2877-80 for Comstock's 15 March 1884 report. For Suter's reply, see "Miscellaneous Correspondence (1885) Between General Gilmore and Major Suter re. Effect of Overflow in Modifying Velocities in the Main River," Box 52, Entry 522, "MRC Special Subject Files, 1871-1928," Record Group 77, NARA, Washington, D.C.
28. Ibid., p. 286. For more on the disputes between Suter and Comstock, see J. P. Kemper, *Rebellious River*, pp. 80-83.
29. Speech of Hon. T. C. Catchings of Mississippi, in the House of Representatives, 22 May 1890 (Washington, 1890), pp. 19-20. Cowdon's enthusiastic support of the Lake Borgne outlet project is evident in two printed documents in the possession of the OH, HQUSACE. See *Memorial of Captain John Cowdon Replying to*

The Report of The Mississippi River Improvement [sic] Commission, 23 February 1881, n.p., n.d.; and *Remarks of Mr. John Cowdon on the Lake Borgne Outlet For The Reclamation of the Low Lands, And For the Improvement of the Low Water Navigation of the Mississippi River Without Levees or River Jetties* (Washington, D.C.: The Government Printing Office, 1882). Both were printed for the U.S. Congress, House of Representatives, Committee on Commerce.

30. Harrison, *Alluvial Empire*, p. 111.

31. Reuss, "Andrew A. Humphreys and the Development of Hydraulic Engineering," p. 27; Colonel Curtis McD. Townsend, "Spillways," *Proceedings of the Louisiana Engineering Society* 11, 4 (August 1925): 126. Information on the debate in Louisiana comes from "Bonnet Carré Test's Result Seen as Victory for Long-Dead Proponents of Outlet Plan," *New Orleans Times-Picayune*, 5 April 1938.

32. U.S. Congress, Senate, *Report on the Mississippi River Floods, Fifty-Fifth Congress, First sess.*, 55th Cong., 3d sess., Lieutenant Colonel Amos Stickney testimony, St. Louis, 28 October 1897, p. 104.

33. Ibid., pp. 104–06; Major Thomas H. Handbury testimony, 28 October 1897, p. 121; Robert S. Taylor testimony, 4 February 1898, pp. 220–24 and 233; B. M. Harrod testimony, 6 February 1898, p. 366; Colonel G. L. Gillespie testimony, 7 February 1898, pp. 390–93; Lieutenant Colonel Amos B. Stickney testimony, 7 February 1898, pp. 413–15. For correspondence relating to the dredging issue and the revision of the MRC's plans, see "Correspondence of Various Committees of MRC During the Period 1895–1896," Box 49, Entry 522, Record Group 77, NARA, Washington, D.C.

34. Senate, *Report on the Mississippi River Floods, Fifty-Fifth Congress, First sess.*, B. M. Harrod testimony, 6 February 1898, p. 365; Henry B. Richardson testimony, 6 February 1898, p. 374.

35. Latimer and Schweizer, *Atchafalaya River Study*, I:C12.

36. *Report of the Board of State Engineers of the State of Louisiana to His Excellency, Murphy J. Foster, Governor of Louisiana, From April 20, 1898 to April 20, 1900* (Baton Rouge, 1900), pp. 10–11.

37. *Report of the Board of State Engineers of the State of Louisiana to His Excellency, Luther E. Hall, Governor of Louisiana, From April 20, 1914 to April 20, 1916* (Baton Rouge, 1916), p. 76.

38. J. A. Ockerson, "The Atchafalaya River: Some of Its Peculiar Physical Characteristics," *Transactions*, 58 (New York: 1907): 6.

39. Ibid., p. 7.

40. Ibid., p. 11.

41. Ibid., pp. 12–15.

42. Ibid., p. 16.

43. Ibid., p. 22.

44. Ibid., p. 23.

45. Ibid., pp. 24–27.

46. ARCE, 1910, I:388–91; U.S. Works Projects Administration, Writer's Program, *Louisiana: A Guide to the State* (New York: Hastings House, 1941), p. 546.

47. Cowdrey, *Land's End*, pp. 61–63.

48. Ibid., p. 63; Richard Quinn, Assistant Engineer, to Lieutenant Colonel Clinton B. Sears, New Orleans, 24 April 1906, and J. S. Brady, Chairman, Executive Committee, Joint Organization Atchafalaya Basin and Lafourche Levee Boards, to Colonel E. H. Ruffner, New Orleans, 7 November 1907, both in Box 2614, Record Group 77, NARA, Fort Worth, Texas.

49. Cowdrey, *Land's End*, p. 65.

50. Cited in Humphreys, *Floods and Levees of the Mississippi River*, p. 190.

51. Ibid.

52. House, *Laws Relating to the Improvement of Rivers and Harbors to 1938*, II:3002, 25 June 1910.

53. A summary memorandum and copies of the various petitions, resolutions, and letters are in "Separation of Waters of Red River from Miss. River," in the collection on "River Engineering. Floods, 1896-1916," Technical Records, MRC.

54. Ibid.

55. U.S. Congress, House of Representatives, *Separation of Red and Atchafalaya Rivers From Mississippi River*, 63d Cong., 2d sess., 19 March 1914, H. Doc. 341; The Mississippi River Commission to The Chief of Engineers, 21 November 1913, subject: Separation of Red and Atchafalaya Rivers from Mississippi River, pp. 5-7.

56. Report of the Board of Engineers for Rivers and Harbors, 24 February 1914, as printed in *ibid.*, pp. 3-4.

57. The Chief of Engineers to the Secretary of War, Washington, 18 March 1914, subject: Report on separation of the waters of the Red and Atchafalaya Rivers from those of the Mississippi, as printed in *ibid.*, p. 1.

58. U.S. Congress, House of Representatives, Committee on Flood Control, *The Mississippi River Floods: Hearings Before the Committee on Flood Control*, 64th Cong., 1st sess., Senator Robert F. Broussard of Louisiana testimony, 8 March 1916, pp. 135-37.

59. Cited in *ibid.*, p. 136.

60. For further information on the evolution of the Newlands bill, see Samuel P. Hays, *Conservation and the Gospel of Efficiency: The Progressive Conservation Movement, 1890-1920* (Cambridge: Harvard University Press, 1959), pp. 109-14, 219-38; Frank, *Flood Control on the Mississippi River*, pp. 132-33; Harrison, *Alluvial Empire*, pp. 129-33.

61. Hays, *Conservation and the Gospel of Efficiency*, pp. 234-38. Preoccupied with World War I, President Woodrow Wilson never appointed anyone to the waterway commission, and Newlands' death in 1919 removed the commission's major advocate. The Water Power Act of 1920 repealed the provision for the stillborn commission.

62. Harrison, *Alluvial Empire*, pp. 158-59; Frank, *Flood Control on the Mississippi River*, pp. 151-53; Elliot, *Improvement of the Lower Mississippi River*, II: 170; Donald C. Swain, *Federal Conservation Policy, 1921-1933* (Berkeley: University of California Press, 1963), pp. 105-07.

63. House, *Laws Relating to the Improvement of Rivers and Harbors to 1938*, III: 1703-07, 1 March 1917.

64. The report is summarized in Latimer and Schweizer, *Atchafalaya River Study*, I:D11-12.

65. Further information on the commission's plans and a reprint of the Ransdell-Wilson bill are presented in the *Report of the Board of State Engineers of the State of Louisiana To His Excellency, Rufin G. Pleasant, Governor of Louisiana From April 20, 1918 to April 20, 1920* (Baton Rouge, 1920), pp. 86-89.

66. Ibid., pp. 88-89.

67. "Separating the Mississippi and Atchafalaya Rivers," *Engineering News-Record* 85, 22 (25 November 1920): 1061.

68. House, *Laws Relating to the Improvement of Rivers and Harbors to 1938*, III: 1847, 3 March 1921.

69. "Report of H. J. Horan, Junior Engineer, on Examination and Survey of the Atchafalaya, Black, and Red Rivers, 18 July 1922, File 1448, Drawer A-7 (1917–27), Technical Records, MRC.

70. "Report of Edward J. Thomas, Assistant Engineer, on Survey of Atchafalaya, Red, and Black Rivers, 15 August 1922, File 165/C11, Drawer A-14 (1917–27), Technical Records, MRC.

71. Colonel Charles L. Potter, "Notes on Separation of Red and Atchafalaya Rivers from the Mississippi—Comments on Mr. Ockerson's Notes," 1 June 1922, File 1449, Drawer A-7 (1917–27), Technical Records, MRC.

72. Elliot, *Improvement of the Lower Mississippi River*, II:170, 318–19.

73. John Ferrell, "From Single- to Multi-Purpose Planning: The Role of the Army Engineers in River Development Policy, 1824–1930" (draft printed manuscript, Baltimore: Historical Division, U.S. Army Corps of Engineers, 1976), pp. 192–204; Swain, *Federal Conservation Policy*, p. 106; Frank, *Flood Control on the Mississippi River*, pp. 114–16.

74. For details on Klorer's Lake Borgne Spillway, see John Klorer, "The Flood Problem of the Lower Mississippi River," *Transactions*, 87 (1924): 1007–14; and "The Mississippi Problem in Light of the 1922 Flood," *Engineering News-Record* 90, 1 (4 January 1923): 21–27. The latter article contains a synopsis of the plans of the engineering subcommittee, chaired by Klorer, of the "Safe River Committee" and an opposing view on why the spillway will not work written by Colonel Townsend. The dispute was continued in the "Letters to the Editor" column of *Engineering News-Record* 90, 8 (2 February 1923): 362–64. J. P. Kemper, a member of the engineering subcommittee, attacked certain facts as untrue in Townsend's article. Perhaps more surprisingly, John Ockerson took issue with Townsend's contention that creation of the spillway would not cause sufficient silting of the Mississippi to substantially impair navigation; Townsend's objections had rested rather on his belief that the spillway would not be able to discharge enough floodwater to relieve New Orleans of danger. Townsend's reply refuted both Ockerson's and Kemper's charges.

75. John R. Freeman to John Klorer, 30 April 1923, Entry 59, John A. Klorer Papers, Special Collections, Howard-Tilton Memorial Library, Tulane University, New Orleans.

76. For more on Maxwell's early career, see Hays, *Conservation and the Gospel of Efficiency*, pp. 9–11, 26, 200–01, 227–28. For information on the boom-and-bust period of Louisiana marshland reclamation, see Harrison, *Alluvial Empire*, pp. 262–71.

77. The background of Maxwell's ideas concerning the Atchafalaya is briefly described in a draft manuscript, principally written by Maxwell, produced by the National Reclamation Association, dated 22–24 August 1927, titled "A Report on the Mississippi River Cataclysm of 1927, With a Comprehensive Plan to Prevent any possible recurrence of such a flood-calamity in any Great Flood of the Future," Box 96, John R. Freeman Papers (MC 51), Massachusetts Institute of Technology Library, Cambridge, Massachusetts. For the relationship between Maxwell and various New Orleans interests, particularly with Walter Parker, General Manager of the New Orleans Association of Commerce, see Ferrell, "From Single- To Multi-Purpose Planning," pp. 204–05.

78. A copy of the page proofs of the document is in Entry 59, Klorer Papers, Special Collections, Howard-Tilton Memorial Library, Tulane University, New Orleans.

79. Ibid., (page proofs), p. 29.

80. Ibid., pp. 29–30.

81. Ockerson's ideas are evident in his rewrite of a draft of the final report on the Atchafalaya, Black, and Red rivers. File labeled "Examination and Survey for Protection of Atchafalaya, Black, & Red Rivers. J. A. Ockerson, 1923," Drawer A-7 (1917–27), "Floodways," Technical Records, MRC.

82. The general controversy over Mississippi River flood control was highlighted in an American Society of Civil Engineers symposium. See "The River and Harbor Problems of the Lower Mississippi," *Transactions*, 87 (1924): 971–1179.

83. Latimer and Schweizer, *Atchafalaya River Study*, I:D13.

84. Ibid.; "Examination and Survey for Protection of Atchafalaya, Black, & Red Rivers. J. A. Ockerson, 1923," MRC, Vicksburg.

85. Ibid.

86. Latimer and Schweizer, *Atchafalaya River Study*, I:D13.

87. Ibid., I:D14–15. For a good overview of the MRC's philosophy toward flood control, see two articles by Colonel Potter, "How the Mississippi River is Regulated: History of the Control of the Great Waterway, with Detailed Description of the Various Types of Works in the Three Sections: The Upper, the Middle, and the Lower River," *Engineering News-Record* 94, 13 (26 March 1925): 508–14; and "Some Suggested Ways of Controlling the Mississippi Floods. Why the Mississippi River Commission Sticks to 'Levees Only' Policy and Does Not Advocate Spillways, Reforestation, Reservoirs or Contour Plowing," *Engineering News-Record* 94, 14 (2 April 1925): 556–59.

88. Latimer and Schweizer, *Atchafalaya River Study*, I:D15.

89. "Orleans Board Would Remove Levee on Mississippi," *Engineering New-Record* 94, (16 April 1925): 666; "Mississippi Spillway Permit Given," *Engineering News-Record* 94, 19 (7 May 1925): 783.

90. Elliot, *Improvement of the Lower Mississippi River*, II:319–21; Cowdrey, *Land's End*, p. 47.

Chapter 4

Après Le Déluge: The Jadwin Plan

1. Frank, *Flood Control on the Mississippi River*, pp. 187–95; Pete Daniel, *Deep'n As It Come. The 1927 Mississippi River Flood* (New York: Oxford University Press, 1977), p. 10; Bruce Alan Lohof, "Hoover and the Mississippi Valley Flood of 1927: A Case Study of the Political Thought of Herbert Hoover" (D.S.S. dissertation, Syracuse University, 1968), pp. 54–56; Martin Reuss, "The Army Corps of Engineers and Flood-Control Politics on the Lower Mississippi," *Louisiana History* 23, No. 2 (spring 1982): 132; Barry, *Rising Tide*, pp. 173–209.

2. Daniel, *Deep'n As It Come*, pp. 39–42, 50–51; Ferrell, "From Single- To Multi-Purpose Planning," pp. 253–54; Cowdrey, *Land's End*, pp. 36–37.

3. Elliot, *Improvement of the Lower Mississippi River*, III:plate XXVIII(e); *Report of the Board of State Engineers of the State of Louisiana to His Excellency, O. H. Simpson, Governor of Louisiana, From April 1st, 1926 to April 1st, 1928* (Baton Rouge, 1928), pp. 80–81; *Congressional Record*, 70th Cong., 1st sess., 1927–28, 69:6724, speech of Congressman Whitmell Martin (D-La.), 18 April 1928; "Failure of Levees in Atchafalaya Basin Spread Mississippi Flood. Water from Red and Tensas River Valleys Breaks Through Levees Along Bayou des Glaises," *Engineering News-Record* 98, 20 (19 May 1927): 829–31; "Levee Failure at McCrea Floods Region Between Atchafalaya and Mississippi Rivers. Weak Point in Eastern Atchafalaya System Gives Way—Large Part

of Mississippi Flood Appears to Be Going Down Atchafalaya Valley," *Engineering News-Record* 98, 21 (26 May 1927): 876–77. See also Glenn R. Conrad, "The Teche Country in the Flood of 1927," in *New Iberia: Essays on the Town and Its People* comp. Glen R. Conrad (Lafayette, Louisiana: Center for Louisiana Studies, University of Southwestern Louisiana, 1979), pp. 279–87. Glenn R. Conrad and Carl A. Brasseaux, *Crevasse! The 1927 Flood in Acadiana* (Lafayette, Louisiana: The Center for Louisiana Studies, University of Southwestern Louisiana, 1994), pp. 21–30.

4. "A Report on the Mississippi River Cataclysm of 1927."

5. *Ibid.*

6. *Ibid.*

7. Besides Kemper's essay cited in the text, see his *Floods in the Valley of the Mississippi: A National Calamity. What Should Be Done About It* (New Orleans: National Flood Commission, 1928). Parker wrote a laudatory introduction to the book. On Klorer's early support of Kemper, see Ferrell, "From Single- to Multi-Purpose Planning," pp. 228–30.

8. John R. Freeman, *Taming the Mississippi* (pamphlet), Box 97, John R. Freeman Papers, Massachusetts Institute of Technology Library, Cambridge, Massachusetts. See also John R. Freeman, "Taming the Mississippi," *Outlook*, 146 (8 June 1927): 182–86; Ferrell, "From Single- to Multi-Purpose Planning," pp. 256–57. Freeman made many contributions to civil engineering at the end of the nineteenth and beginning of the twentieth centuries, but the general conservatism of his engineering approach has been little appreciated. His emphasis on levees is one indication of the approach. Another is his continued championing of massive gravity dams in the face of overwhelming evidence that multiple-arched dams were generally safer. I am indebted to Professor Donald C. Jackson of Lafayette College for this insight.

9. Freeman, *Taming the Mississippi*. On Freeman's advocacy of a hydraulics laboratory (and the Corps of Engineers' long-standing opposition to it), see Arthur E. Morgan, *Dams and Other Disasters: A Century of the Army Corps of Engineers in Civil Works* (Boston: Porter Sargent, 1971), pp. 185–239; Hunter Rouse, *Hydraulics in the United States, 1776–1976* (Iowa City: Iowa Institute of Hydraulics Research, University of Iowa, 1976), p. 108; Reuss, "Andrew A. Humphreys and the Development of Hydraulic Engineering," pp. 32–33.

10. Frank, *Flood Control on the Mississippi River*, pp. 215–16; U.S. Congress, House of Representatives, Committee on Flood Control, 70th Cong., 1st sess. 1928, Com. Doc. 17.

11. Frank, *Flood Control on the Mississippi River*, pp. 219–20. The Associated Press news release on the Hoover–Jadwin statement is reprinted in its entirety in Kemper, *Floods in the Valley of the Mississippi*, pp. 44–48. Hoover provided his own recommendations to President Coolidge in a letter dated 20 July 1927 and reprinted in part in Herbert Hoover, *The Memoirs of Herbert Hoover. The Cabinet and the Presidency, 1920–1933* (New York: The Macmillan Co., 1952), p. 124.

12. "Special Report of the Mississippi River Commission on Revision of Plans for Improvement of Navigation and Flood Control of the Mississippi River," St. Louis, 28 September 1927, Box 2, Entry 523, Record Group 77, NARA, Suitland, Maryland. All documents cited in this book from the Washington National Records Center at Suitland were transferred either to the Washington D.C. or the College Park, Maryland, facilities of NARA after research for this book was completed. See also Ferrell, "From Single- To Multi-Purpose Planning," pp. 274–75; Harrison, *Alluvial Empire*, pp. 160–61; Kemper, *Floods in the Valley of the Mississippi*, pp. 108–130.

13. Kemper, *Floods in the Valley of the Mississippi*, pp. 131–38.

14. "Special Report of the Mississippi River Commission on Revision of Plans for Improvement of Navigation and Flood Control of the Mississippi River," St. Louis, 28 September 1927, Box 2, Entry 523, Record Group 77, NARA, Suitland, Maryland; U.S. Congress, House of Representatives, *Flood Control in the Mississippi Valley*, 70th Cong., 1st sess., 8 December 1927, H. Doc. 90; Ferrell, "From Single- To Multi-Purpose Planning," pp. 276-279; Harrison, *Alluvial Empire*, p. 161; Frank, *Flood Control on the Mississippi River*, pp. 224-26.
15. House, *Flood Control in the Mississippi Valley*, sections 103-113.
16. *Congressional Record*, 1927-28, 69:6725-2726.
17. *Ibid.*, 6725.
18. *Ibid.*
19. Testimony cited in *ibid.*
20. On the mining of rock salt, see Davis, *Louisiana*, p. 299. On the discovery of oil, see Glenn R. Conrad, "The Discovery of Oil in Iberia Parish Little Bayou, 1917," in *New Iberia: Essays on the Town and Its People* comp. Glen R. Conrad (Lafayette, Louisiana: Center for Louisiana Studies, University of Southwestern Louisiana, 1979), pp. 272-78.
21. *Congressional Record*, 1927-28, 69:6725.
22. U.S. Congress, House of Representatives, *Control of the Destructive Flood Waters of the United States, Part 5, The Mississippi River and Its Tributaries*, 70th Cong., 1st sess., 23 January 1928, pp. 3584-85. Part of this testimony is cited in Kemper, *Floods in the Valley of the Mississippi*, pp. 158-59. See also Frank, *Flood Control on the Mississippi River*, pp. 226-29.
23. Frank, *Flood Control on the Mississippi River*, p. 231.
24. *Ibid.*, pp. 233-34.
25. *Ibid.*, pp. 234-35.
26. Quoted from the MRC report in *ibid.*, p. 239.
27. *Congressional Record*, 1927-28, 69:6793.
28. Frank, *Flood Control on the Mississippi River*, pp. 242-43.
29. Paul Wooten, "Washington Notes," *Engineering News-Record* 100, 19 (19 May 1928): 758; "President Signs the Flood Bill," *Engineering News-Record* 100, 20 (17 May 1928): 790.
30. Michael Barone, *Our Country: The Shaping of America from Roosevelt to Reagan* (New York City: The Free Press, 1990), p. 31; U.S. Department of Commerce, Bureau of the Census, *Historical Statistics of the United States: Colonial Times to 1970*, 2 vols. (Washington, D.C.: Department of Commerce, 1975), II:1114. The federal budget in 1928 was \$2.96 billion. Congress appropriated the first monies pursuant to the 1928 Flood Control Act on 29 May 1928. The amount was \$14 million for flood control and \$1 million for emergency repairs and maintenance and for rescue work.
31. U.S. Congress, House of Representatives, *Laws of the United States Relating to the Improvement of Rivers and Harbors, From August 11, 1790 to January 2, 1939*, 3 vols. (Washington, D.C.: Government Printing Office, 1940), III: 2004, 15 May 1928.
32. *Congressional Record*, 1927-28, 69:6725; Frank, *Flood Control on the Mississippi River*, pp. 246-47; Kemper, *Floods in the Valley of the Mississippi*, p. 160.
33. Kemper, *Floods in the Valley of the Mississippi*, pp. 160-63.
34. *Ibid.*, pp. 222-23. The entire "Appeal of the Atchafalaya Basin Protective Association to the Special Board" is reprinted in Appendix B, pp. 198-233.
35. *Ibid.*, p. 199.
36. *Ibid.*, p. 165.

37. *Ibid.*, p. 168.
38. The memorandum is reproduced in Kemper, *Rebellious River*, pp. 163–67.
39. *Ibid.*, p. 166.
40. *Ibid.*, p. 167.
41. Kemper, *Floods in the Valley of the Mississippi*, p. 248. The board's report is reprinted on pp. 234–52 of this book.
42. *Ibid.*, p. 252.
43. *Ibid.*, p. 245.
44. Ferrell, "From Single- To Multi-Purpose Planning," pp. 299–300; Frank, *Flood Control on the Mississippi River*, p. 249.
45. House, *Flood Control in the Mississippi Valley* [Jadwin Plan], p. 9.
46. Ferrell, "From Single- To Multi-Purpose Planning," pp. 298–99; Frank, *Flood Control on the Mississippi River*, p. 250; House, *Laws Relating to the Improvement of Rivers and Harbors to 1939*, 3:2006.
47. "Communications of President Coolidge Approving Report of Mississippi Flood-Control Board," appendix to "Request of Secretary of War for Opinion of Attorney General," all in U.S. Congress, House of Representatives, Committee on Flood Control, "Opinion of the Attorney General In Regard to Certain Provisions of the Mississippi Flood Control Act of May 15, 1928," 71st Cong., 1st sess., 19 July 1929, Com. Doc. 2, p. 10.
48. *Ibid.*, pp. 10–12.
49. Jadwin to Jackson, Washington, 19 January 1929, File 7406, "Miss. River-Atchafalaya Flwy," Box 920, Entry 111, Record Group 77, NARA, Suitland, Maryland.
50. Paul Wooten, "Washington Notes," *Engineering News-Record* 102, 2 (10 January 1929): 82. A good explanation of the Corps' position on land acquisition and flowage rights is given in a letter from Major P. S. Reinecke, Assistant to the President, Mississippi River Commission, to Alfred D. Stedman, Editorial Department, St. Louis *Dispatch*, St. Louis, 9 April 1929, File 3227, "Activities, etc. Under F. C. A. of 5/15/28," Box 16, Technical Records, MRC. The Corps of Engineers had also received offers to waive or sell flowage rights in the Bayou Des Glaises loop. However, following Section 4 of the Flood Control Act, the Corps did not dispute the necessity of acquiring flowage rights there since the levee was to be set back and, consequently, land previously protected would be subject to inundation. Once the new levee was finished, the eastern part of the old levee, which was directly in the path of the flood flow into the Atchafalaya Basin, would be removed.
51. Holcombe to the Chief of Engineers, New Orleans, 29 December 1928, file on "Morganza-West Atchafalaya Rights-of-Way, 1928–29," Box 87, Accession 76A-1429, Record Group 77, NARA, Fort Worth, Texas. From 1931 to 1940, there were two engineer districts operating out of New Orleans. The First New Orleans District was part of the Gulf Division and was mainly responsible for navigation improvements on the Mississippi River and the Intracoastal Waterway. The Second New Orleans District grew out of the old Mississippi River Commission's Fourth District and reported to the Lower Mississippi Valley Division. It focused entirely on the Lower Mississippi and its tributaries and outlets, and its work included flood control. In 1940, the two offices were united. "New Orleans District Engineer" will hereinafter be used to identify the officer in charge of the Second District.
52. Wooten, "Washington Notes," (10 January 1929): 82. Jadwin wanted the state to acquire the levee rights-of-way and sell them to the United States "in the interest of simplicity of procedure and saving of time." Another reason for Jadwin's position was that Section 4 of the 1928 Flood Control Act required that land acquired for the project

be eventually turned over to the state without cost, so using state assessment procedures seemed eminently fair. See Charles Hendricks' unpublished manuscript dealing with Corps civil works real estate history, OH HQUSACE.

53. *Raleigh News and Observer*, 14 November 1928, as cited in Frank, *Flood Control on the Mississippi River*, p. 251.

54. U.S. Congress, House of Representatives, Committee on Flood Control, "Brief Presented to President Hoover by Senators and Representatives from States in the Mississippi Valley in Support of Request for Interpretation and Review of Certain Provisions of the Mississippi Flood Control Act of 15 May 1928, From, First, the Administrative Standpoint; Second, the Legislative Standpoint," 71st Cong., 1st sess., 19 July 1929, Com. Doc. 2, p. 1.

55. Ibid., p. 2.

56. Ransdell to Hoover, 6 June 1929, Washington, D.C., Flood Control File (OF 132-B), February 1929-February 1933, Herbert Hoover Presidential Papers, Herbert Hoover Presidential Library, West Branch, Iowa [hereinafter cited as Hoover Papers].

57. Ibid., pp. 7, 14.

58. Ibid., p. 15.

59. Quoted in a letter from L. W. Wallace, Executive Secretary, American Engineering Council, to Senator Lynn J. Frazier (D-N. Dak.), 31 May 1929, Washington, D.C. (copy), OF 132-B, Hoover Papers; *Manufacturers Record*, 30 May 1929, p. 58, clipping in Box 96, John R. Freeman Papers, Massachusetts Institute of Technology Library, Cambridge, Massachusetts. Members of the council's committee on flood control were Gardner S. Williams, Baxter L. Brown, Arthur E. Morgan, and John R. Freeman.

60. W. H. Dick, President, Mississippi River Flood Control Association, to George Akerson, Secretary to the President, OF 132-B, Hoover Presidential Papers; Ferrell, "From Single- To Multi-Purpose River Development," p. 300.

61. "Mississippi Floodway Bodies Answer Secretary Good," *Engineering News-Record* 102, 26 (27 June 1929): 1046.

62. James N. Clarke, Treasurer, The Association for the Conservation, Control and Utilization of Our Water Resources, 30 December 1929, Lexington, Nebraska, inclosing an article by C. W. McConaughy, "Flood Control—the Right Way and the Wrong," *Public Ownership: A Monthly Journal Devoted to Public Utility Problems and Social Progress* 11, 10 (October 1929): 215-18, OF 132-B, Hoover Papers. Before publication of his report (H. Doc. 90), Jadwin had appointed a special board of engineer officers to look at the whole question of reservoir construction on the Mississippi. The board reported that, "The Chief of Engineers has outlined a project to care for the maximum future flood by a combination of levees, spillways, and flood channels...which is far cheaper than any method the board has been able to devise for accomplishing the same result by any combination of reservoirs." See U.S. Congress, House of Representatives, Committee on Flood Control, *Report on the Control of Floods of the Mississippi River by Means of Reservoirs*, 70th Cong., 1st sess., 1928, Com. Doc. 17, p. 33. See also Reuss, "Flood-Control Politics," p. 142.

63. *The Courier Journal*, 1 July 1929. The clipping evidently was enclosed in a letter from Jadwin to Hoover and returned to Jadwin on 24 July 1929. Lawrence Richey, Secretary to the President, to General Jadwin, 24 July 1929, Washington, D.C., OF 132-B, Hoover Papers.

64. *Kincaid v. United States*, 35 F.(2d) 235.

65. Ibid.; *New Orleans Times-Picayune* (n.d.) (c. spring, 1929), clipping in OF 132-B, Hoover Papers.

66. *Kincaid v. United States*, 35 F.(2d) 235; excerpts from this case are reproduced in Kemper, *Rebellious River*, pp. 176-87.
67. *Kincaid v. United States*, 35 F.(2d) 235.
68. "Mississippi River Floodways," *Engineering News-Record* 104, 6 (6 February 1930): 212.
69. *Kincaid v. United States*, 35 F.(2d) 602.
70. *Ibid.*
71. *Hurley (Secretary of War) v. Kincaid*, 285 U.S. 95; Homer S. Cummings, the Attorney General, to George H. Dern, the Secretary of War, Washington, D.C., 8 June 1933 (copy); see also Charles Hendricks manuscript on Corps civil works real estate history.
72. *Hurley v. Kincaid*, 285 U.S. 95.
73. Copies of these bills, and accompanying correspondence, can be found in OF 132-B, Hoover Papers; in File 3227, "Activities, etc. Under F. C. A. of 5/15/28," Box 16, Technical Records, MRC.
74. L. Wallace, Executive Secretary, American Engineering Council, to Mr. Lawrence Richey, Secretary to the President, 14 September 1929; Ransdell to the President, 20 September 1929, Washington, D.C.; Robinson to the President, 21 September 1929, Washington, D.C.; Driver to the President, 20 September 1929, Osceola, Arkansas (telegram), all in OF 132-B, Hoover Papers; Ferrell, "From Single-To Multi-Purpose Planning," p. 300.
75. *Manufacturers Record*, 10 October 1929, copy in 132-B, Hoover Papers.
76. *The Daily Bulletin of the Manufacturers Record*, 1 November 1929, copy attached to letter of L. Wallace to Lawrence Richey, 5 November 1929, Washington, D.C.; Hoover to Richard W. Edmonds of *Manufacturers Record*, 9 October 1929, Washington, D.C., both in OF 132-B, Hoover Papers. The quotation is from a speech Hoover gave in Louisville on 23 October on the occasion of the completion of the nine-foot channel on the Ohio River.

Chapter 5

The Politics of Engineering

1. Quoted in Edwin T. Layton, Jr., *The Revolt of the Engineers: Social Responsibility and the American Engineering Profession*, paperback edition (Baltimore: The Johns Hopkins University Press, 1986), pp. 189-90.
2. *Ibid.*, p. 2; see also William J. Barber, *From New Era to New Deal: Herbert Hoover, the Economists, and American Economic Policy, 1921-1933* (Cambridge: Cambridge University Press, 1985), especially pp. 108-09.
3. Herbert Hoover, State of the Union Address, 2 December 1930, *Public Papers of the Presidents of the United States*. Public Messages, Speeches, and Statements of the President, January 1 to December 31, 1930 (Washington, D.C.: Office of the *Federal Register*, National Archives and Records Service, 1976), p. 511.
4. *Ibid.*, pp. 511-14.
5. "Reorganization of the Engineer Department Announced by Chief," *The Contractor* XI, 11 (November 1929): 52. Despite this reorganization and Brown's appointment, relationships between Hoover and the Corps remained rocky. One reason was Hoover's flirting with the idea of creating a position of Public Works Administrator which, in some versions, would have threatened the independence of the Corps. Finally, after he had lost the election in 1932, Hoover recommended to Congress that the civil

functions of the Army Corps of Engineers be transferred to the Department of the Interior along with the public works functions of several other agencies. Although this recommendation was part of a larger package that would have consolidated the functions of a number of agencies, the provision that affected the Corps drew the most attention. In the end, Congress categorically refused to go along with Hoover, both because the recommendations were coming from a lame duck President and because of the extraordinary opposition to the specific proposal regarding the Corps. See Arthur Maass, *Muddy Waters, The Army Engineers and the Nation's Rivers* (Cambridge, Massachusetts: Harvard University Press, 1951) pp. 67-68. See also Hoover, State of the Union Address, 8 December 1931, *Public Papers of the Presidents of the United States*, p. 594; ibid., The President's News Conference of 29 December 1931 p. 652; Ibid. (Washington, D.C.: Office of the *Federal Register*, National Archives and Records Service, 1977), Herbert Hoover, 1933, 882-91, Special Message to Congress on Reorganization of the Executive Branch, 9 December 1932. Copies of some of the relevant bills and correspondence can be found in the Research Collections, OH HQUSACE. See Civil Works, Reorganization, Series III, Files 1-3, Box 2.

6. Hoover to Hurley, 31 December 1929, Washington, D.C., OF 132-B, Hoover Papers. The letter is also cited in Ferrell, "From Single- To Multi-Purpose Planning," p. 301.

7. "Mississippi Plan Revision," *Engineering News-Record* 104, 8 (20 February 1930): 307.

8. U.S. Congress, House of Representatives, Committee on Flood Control, Hearings, *Flood Control on the Mississippi River*, 5 parts, 71st Cong., 2d sess., 1930, part 1, p. 1, 10 February 1930.

9. Ibid. John Quillin Tilson (R-Conn) was the House majority leader.

10. Ibid., pp. 26-28.

11. Ibid., pp. 59-60.

12. Ibid., pp. 41-42. A complete copy of the report was reprinted in U. S. Congress, House of Representatives, Committee on Flood Control, Hearings, *Flood Control on the Mississippi River*, 71st Cong., 3d sess., 1931, pp. 165-94, January 1931.

13. U.S. Congress, House of Representatives, Committee on Flood Control, 70th Cong., 1st sess., 1927, Com. Doc. 2, p. 33.

14. Ibid.

15. For more on this controversy, see Kemper, *Floods in the Valley of the Mississippi*, pp. 147-56.

16. Section 56 of the Louisiana Plan. The entire plan is reprinted in House Committee, *Flood Control on the Mississippi River*, 71st Cong., 3d sess., pp. 165-226.

17. House Committee, *Flood Control on the Mississippi River*, 71st Cong., 2d sess., part 1, pp. 49-58, 10 February 1930.

18. House Committee, *Flood Control on the Mississippi River*, 71st Cong., 3d sess., p. 184.

19. Ibid., pp. 165-226; *Report of the Board of State Engineers of the State of Louisiana to His Excellency, Huey P. Long, Governor of Louisiana, From April 1st 1928 to April 1st 1930* (Baton Rouge, 1930), pp. 71-76; *Report of the Board of State Engineers of the State of Louisiana to His Excellency, Alvin O. King, Governor of Louisiana, From April 1st 1930 to April 1st 1932* (Baton Rouge, 1932), pp. 155-56.

20. House Committee, *Flood Control on the Mississippi River*, 71st Cong., 2d sess., part 1, pp. 64-92.

21. Ibid., Wade O. Martin testimony, 11 February 1930, pp. 92-99.

22. House Committee, *Flood Control on the Mississippi River*, 71st Cong., 2d sess., part 5, pp. 1403-04, 3 June 1930.
23. Ibid., Major General Brown testimony, 3 June 1930, p. 1283.
24. Ibid.
25. Ibid.
26. Ibid., p. 1337.
27. Ibid., p. 1345.
28. House Committee, *Flood Control on the Mississippi River*, 71st Cong., 3d sess., p. 3, letter from Harry Jacobs and the Board of State Engineers to the Honorable J. H. Sinclair, 1 January 1931. The revised state report, without the consideration of the 11-reservoir system, dated 1 December 1930, is in *ibid.*, pp. 195-226.
29. U.S. Congress, House of Representatives, Committee on Flood Control, *Control of Floods in the Alluvial Valley of the Lower Mississippi River*, 71st Cong., 3d sess., 3 March 1931, H. Doc. 798, pp. 7-8. The report is also summarized in "Jadwin Plan for Mississippi Flood Control Approved by Chief of Engineers," *Engineering News-Record* 106, 11 (12 March 1931): 448-50.
30. T. H. Jackson to the Chief of Engineers, subject: Report of Mississippi River Commission on Modification of Flood Control Plan, On Board U.S. Steamer *Mississippi*, 8 December 1929, doc. 1042, Drawer A-16 (1928-43), Technical Records, MRC.
31. House Committee, *Flood Control on the Mississippi River*, 71st, 3d sess., p. 195.
32. U.S. Congress, House of Representatives, Committee on Flood Control, *Control of Floods in the Alluvial Valley of the Lower Mississippi River*, 71st Cong., 3d sess., 3 March 1931, H. Doc. 798, p. 8.
33. Brown to Jackson, Washington, D.C., 20 April 1931 (copy), File 1, Box 87 (1/87), Whittington Papers, Library, University of Mississippi, Oxford, Mississippi.
34. See Chapter 4, note 51, for an explanation of the two Corps of Engineers districts in New Orleans.
35. Hodges to the President, Mississippi River Commission, subject: Revision of Plans, Atchafalaya Basin, New Orleans, 13 October 1931, doc. 336, Drawer A-7 (1928-43), Technical Records, MRC.
36. U.S. Congress, House of Representatives, Committee on Flood Control, *Control of Floods in the Alluvial Valley of the Lower Mississippi River*, 71st Cong., 3d sess., 3 March 1931, H. Doc. 798, p. 7.
37. "Control of Floods in the Alluvial Valley of the Lower Mississippi River," p. 14.
38. Louisiana Board of State Engineers, "Flood Control Bulletin, New Orleans, 30 July 1931, p. 6, File 1, Box 87 (1/87), Whittington Papers, Library, University of Mississippi, Oxford, Mississippi.
39. *Report of the Board of State Engineers to Alvin O. King*, p. 51.
40. Ibid., p. 53; House Committee, *Flood Control on the Mississippi River*, 71st Cong., 2d sess., part I:11 February 1930, pp. 92-99; U.S. Congress, House of Representatives, Committee on Flood Control, Hearings, *Progress and Present Status of Flood Control on the Mississippi River and Its Tributaries*, 73d Cong., 1st sess., Harley Ferguson testimony, 30 March 1933, p. 18.
41. Harley B. Ferguson memorandum, Norfolk, Virginia, 22 November 1930, No. 2970, vol. 13, p. 9, Harley B. Ferguson Papers, Southern Historical Collection, University of North Carolina Library, Chapel Hill, North Carolina.

42. Ibid.

43. House Committee, *Flood Control on the Mississippi River*, 72d Cong., 1st sess., 26 January 1932, pp. 32-36; ibid., 28 January 1932, p. 55 (the committee resolution is printed here); Reuss, "Flood-Control Politics," p. 138; ARCE, 1933, I:1274; "Progress Report, Flood Control Work, Mississippi River and Tributaries," October 1932, p. 3. These monthly progress reports are filed in the technical library, Lower Mississippi Valley Division, Vicksburg, Mississippi.

44. Ibid.; ARCE, 1933, I:1274.

45. Information on Ferguson obtained from the biographical files in OH HQUSACE.

46. Examples include a Ferguson memorandum, "Effective Dredging," Vicksburg, 31 October 1932, and another memorandum, "Outlets," 4 November 1932, Vicksburg, both in Folder 32, Ferguson Papers.

47. Ferguson memorandum, "Effective Dredging."

48. Quotation and other information from "Mule Gives Clue to Flood Control," *New Orleans States Item*, 9 July 1933.

49. House Committee, *Progress and Present Status of Flood Control on the Mississippi River and Its Tributaries*, p. 19.

50. "Progress Report, Flood Control Work, Mississippi River and Tributaries," April 1934, p. 3; U.S. Congress, House of Representatives, Committee on Flood Control, Hearings, *Flood Control in the Mississippi Valley*, 74th Cong., 1st sess., 2 April 1935, p. 75.

51. House Committee, *Flood Control in the Mississippi Valley*, p. 76; Ferguson memorandum, Vicksburg, Mississippi, 16 February 1934, Box 87, Accession 76A-1429, Record Group 77, NARA, Fort Worth, Texas.

52. Ferguson memorandum.

53. House Committee, *Progress and Present Status of Flood Control on the Mississippi River and Its Tributaries*, p. 21.

54. I am indebted to Professor Ted Steinberg of the New Jersey Institute of Technology for bringing the legal situation to my attention. See his essay, "Identity Crisis in Bayou Country," in his book, *Slide Mountain or the Folly of Owning Nature* (Berkeley: University of California Press, 1995), pp. 52-81. For more on Louisiana water law, see Mark E. Borton and Harold H. Ellis, *Some Legal Aspects of Water Use in Louisiana*, Bulletin No. 537 (Baton Rouge: Louisiana State University and Agricultural and Mechanical College, 1960), especially pages 9-15 for cases dealing with land accretion.

55. ARCE, 1934, I:1478.

56. ARCE, 1939, I:2233.

57. Brigadier General H. B. Ferguson, *History of the Improvement of the Lower Mississippi River for Flood Control and Navigation, 1932-1939* (Vicksburg: Mississippi River Commission, 1940), p. 177.

58. Memorandum, "Dredged Channel Below End of Atchafalaya River Levees," Vicksburg, Mississippi, 18 January 1932, doc. 594, Drawer A-7 (1928-43), Technical Records, MRC.

59. *Report of the Board of State Engineers of the State of Louisiana to His Excellency, Oscar K. Allen, Governor of Louisiana From April 1st, 1932 to April 1st, 1934* (Baton Rouge, 1934), pp. 141-42; see J. P. Kemper's statement in 1934 that the people on the Atchafalaya wish "to have all possible pressure brought to bear on the engineers to have them continue this work of enlarging the main channel of the river."

House Committee, *Flood Control on the Mississippi River*, 73d Cong., 2d sess., p. 93, 9 February 1934.

60. Memorandum by Gerard H. Matthes, "Report on Atchafalaya River," Vicksburg, Mississippi, 12 December 1940, doc. 1,420, Drawer A-9 (1928–43), Technical Records, MRC.

61. Figures on the amount of excavation in the 1930s and on land development in Grand Lake come from Steinberg, *Slide Mountain*, pp. 57, 63.

62. Memorandum by Matthes, "Report on Atchafalaya River," Vicksburg, Mississippi, 12 December 1940, doc. 1,420, Drawer A-9 (1928–43), Technical Records, MRC. Matthes was a well-respected engineer. Born in Holland and a graduate of MIT, he helped establish the Hydraulics Division of the American Society of Civil Engineers (ASCE) in 1938. Later, the ASCE awarded him its prestigious Normal Medal. He served as director of the Waterways Experiment Station during World War II.

63. For the Louisiana shrimp industry during the 1930s, see Rushton, *Cajuns*, p. 108. On commercial fishing in general in the Atchafalaya Basin, see *Archeology and Ethnology*, pp. 147–49, 221–27. As early as 1940, Morgan City claimed the title of shrimp capital of the world.

64. Memorandum, "Dredged Channel Below End of Atchafalaya River Levees," Vicksburg, Mississippi, 18 January 1932, doc. 594, Drawer A-7 (1928–43), Technical Records, MRC.

65. Quoted in Jack and Anne Rudloe, "Trouble in Bayou Country," p. 390.

66. Matthes memorandum.

67. Ibid.

68. For an example, see the correspondence regarding claims by E. A. Davis that the flood control project was destroying his timber. E. A. Davis to Secretary of War George H. Dern, 24 February 1935; John H. Carruth, Executive Officer, Second New Orleans District, to President, Mississippi River Commission, 4 April 1935; Brigadier General Homer Ferguson to Chief of Engineers, 6 April 1935, all in File 7402, "Miss. R." 3074, Entry 111, Record Group 77, NARA, Suitland, Maryland.

69. U. S. Engineer Office, Second New Orleans District, "West Atchafalaya Drainage and Irrigation Study," 12 December 1938, Drawer A-16, Technical Records, MRC.

70. Quoted in Jack and Anne Rudloe, "Trouble in Bayou Country," p. 390.

71. Information from Kerr, *Legislative Acts*.

72. U. S. Congress, Senate, Committee on Commerce, Subcommittee, Hearing, *Flood Control Work in Red River, Atchafalaya, and Bayou Boeuf Levee District*, 73d Cong., 2d sess., Harry Jacobs testimony, 5 February 1934, p. 12.

73. Senate Committee, *Flood Control Work in Red River, Atchafalaya, and Bayou Boeuf Levee District*, Harry Jacobs testimony, pp. 9–15.

74. Ibid. and also copies of levee board resolutions, 7 October and 22 December 1930, p. 53.

75. Senate Committee, *Flood Control Work in Red River, Atchafalaya, and Bayou Boeuf Levee District*, Holcombe to Mr. W. C. Hudson, President, Red River, Atchafalaya, and Bayou Boeuf Levee District, New Orleans, 16 February 1931, pp. 26–27.

76. Ibid., Harry Jacobs and Sol B. Pressburg, Secretary of the Red River, Atchafalaya, and Bayou Boeuf Levee Board testimony, pp. 14–15, 27–28.

77. Ibid., "Resolution Passed by Board of Commissioners for Red River, Atchafalaya, and Bayou Boeuf Levee Board Re Reimbursement for Rights-of-Way,"

Alexandria, Louisiana, 22 June 1931, p. 41. The levee sections were named "Woodside," "St. Joseph's Church," and "Bayou Current."

78. Ibid., William C. Hudson, President of the Red River, Atchafalaya, and Bayou Boeuf Levee District testimony, pp. 34–35.

79. Ibid., pp. 34–35, 56–58; House Committee, *Flood Control on the Mississippi River*, 72d Cong., 1st sess., Harry Jacobs testimony, 28 January 1932, pp. 83–85.

80. Senate Committee, *Flood Control Work in Red River, Atchafalaya, and Bayou Boeuf Levee District*, pp. 35–40, John H. Overton and Riley J. Wilson to Secretary of War George H. Dern, 15 May 1933, subject: Legal obligation of the Federal Government to pay for levees rights-of-way on the Atchafalaya River and on the south bank of the Red River.

81. Ibid., pp. 7, 40–41.

82. Ibid., Cummings to Dern, Washington, D.C., 8 June 1933, pp. 40–41.

83. Ibid., Secretary of War Dern to Senator John H. Overton, Washington, 14 June 1933, p. 42; remarks of Senator Overton, p. 6.

84. Ibid., introductory comments by Senator John H. Overton, p. 2; and Cummings to Dern, Washington, D.C., 5 September 1933, pp. 43–44; Harry H. Woodring, Acting Secretary of War, to Cummings, 20 July 1932, File 6500, "Mississippi River," part 2, Box 873, Entry 111, Record Group 77, NARA, Suitland, Maryland. Most of the correspondence between the Secretary of War, Attorney General, Adjutant General, Comptroller General, and Chief of Engineers regarding levee rights-of-way in the Red River, Atchafalaya, and Bayou Boeuf Levee District in the early 1930s can be found in the original in the aforementioned archival reference, parts 2 and 3.

85. Quoted in T. Harry Williams, *Huey Long* (New York: Random House Vintage Books, 1969), p. 594.

86. Ibid.

87. Quoted in A. David Poe, "The Political Career of John Holmes Overton, 1912–1948" (unpublished M.S. thesis, Northwestern State College of Louisiana, 1968), p. 55; Williams, *Huey Long*, pp. 604–18, 682–86.

88. Poe, "John Holmes Overton," p. 55.

89. Elliott Thurston, "Who's New in Washington," *Scribner's Magazine* 93, 3 (March 1933): 137.

90. Senate Committee, *Flood Control Work in Red River, Atchafalaya, and Bayou Boeuf Levee District*, p. 48.

91. Ibid., p. 49.

92. Ibid., pp. 43–44, Attorney General Homer S. Cummings to Secretary of War George H. Dern, Washington, D.C., 5 September 1933. The doctrine of equitable estoppel asserts that a party's act or conduct precludes the assertion of rights that might otherwise have existed.

93. The words are those of Colonel Graves, who described General Brown's position in testimony before the Senate Committee on Commerce. See *ibid.*, p. 6.

94. Ibid., pp. 44–47, Comptroller General of the United States to the Secretary of War, Washington, D.C., 8 December 1933; Colonel W. A. Graham, Acting Judge Advocate General, to the Assistant Secretary of War, 17 October 1933, subject: Payment for levee rights-of-way, Red River, Atchafalaya and Bayou Boeuf Levee District, File 6500 "Miss. R.," Box 873, Entry 111, Record Group 77, NARA, Washington D.C.

95. The two bills are in the "Chronological Files to 1940," John Holmes Overton Papers, Cammie G. Henry Research Center, Watson Library, Northwestern State University of Louisiana, Natchitoches, Louisiana [hereinafter cited as Overton Papers]. Before they were removed to Northwestern, the Overton Papers were kept at the library

at the Louisiana State University at Baton Rouge, where Dr. Martin Gordon of the Office of History examined them in 1979 and provided various photocopies to the author.

96. Senate Committee, *Flood Control Work in Red River, Atchafalaya, and Bayou Boeuf Levee District*, p. 7; Poe, "John Holmes Overton," p. 62.

97. U.S. Congress, Senate, *Payment for Levee Rights-of-Way*, 73d Cong., 2d sess., 20 February 1934, Committee Report 349; Sol Pressburg to the Honorable John H. Overton, Alexandria, Louisiana, 22 February 1934. Both in the "Chronological Files to 1940," Overton Papers.

98. Poe, "John Holmes Overton," p. 62; "Dear Urging Levee Board Be Paid." *Alexandria (Louisiana) Daily Town Talk*, 6 February 1934. Clipping in the "Chronological Files to 1940," Overton Papers.

99. Overton to L. E. French, 16 March 1934 (copy), "Chronological Files to 1940," Overton Papers; Poe, "John Holmes Overton," p. 63.

100. Iberia-St. Martin Parish Flood Control Organization, "Statement of Conditions Confronting St. Martin and Iberia Parishes in Connection with the Plan for Flood Control and the Adoption of the Jadwin Plan in the Atchafalaya Basin," St. Martinville, Louisiana, 14 February 1929, as printed in House Committee, *Flood Control on the Mississippi River*, 71st Cong., 2d sess., part 5, p. 1934.

101. Louisiana State Department of Agriculture and Immigration, *Louisiana's 100-Year Struggle with the Mighty Mississippi* (Baton Rouge: Ramires-Jones Printing Co., 1930), p. 22.

102. Correspondence and bills relating to flowage easements in the period 1931–32 can be found in File 3227, "Miss. R.," Box 873, Entry 111, Record Group 77, NARA, Suitland, Maryland.

103. U.S. Congress, House of Representatives, Committee on Flood Control, *Control of Floods in the Alluvial Valley of the Lower Mississippi River*, Annex 13 (Land Data—Offers to Waive Claims, Atchafalaya Basin and Backwater Areas), 71st Cong., 3d sess., H. Doc. 798, p. 989; and in same volume, Annex 20 (Report Submitted by the Department of Agriculture to the Secretary of War on the Valuation of Property Between the Proposed Protective Levees of the Boeuf and Atchafalaya Basins, and in the Red River Backwaters), p. 1521.

104. This goal was explicitly recommended in "A National Plan for American Forestry," more popularly called the Copeland Report because the Forest Service submitted it, March 1933, in response to Senate Resolution 175, which had been introduced in the previous congressional session by Senator Royal S. Copeland of New York. Along with more extensive public ownership of forest lands, the report recommended more intensive management. See A. L. Riesch Owen, *Conservation Under FDR* (New York: Praeger Publishers, 1983), pp. 107–08.

105. Edgar B. Nixon, *Franklin D. Roosevelt and Conservation, 1911–1945*, 2 vols. (Hyde Park, New York: General Services Administration, National Archives and Records Service, 1957), II:154; Robert Y. Stuart, Forester, Forest Service to Louis M. Howe, Personal Secretary to the President, Washington, 19 April 1933, doc. 139; *ibid.*, II:155–58; Robert Y. Stuart To Henry A. Wallace, Secretary of Agriculture, Washington, 18 April 1933, doc. 140. The President had initially decided to set aside some \$25 million, but in an executive order of 12 May 1933, he reduced the figure to \$20 million.

106. *Ibid.*, II:158. Note one to doc.140; *ibid.*, II:182–83, Henry A. Wallace, Secretary of Agriculture, to Roosevelt, Washington, 16 June 1933, fov. 156.

107. *Ibid.*, II:183–84, Roosevelt to Wallace, Pulpit Harbor, Maine, 24 June 1933, doc. 157.

108. Ibid.
109. Ibid., II:190, Roosevelt to Wallace, Washington, 11 July 1933, doc. 161.
110. Ibid., II:191–93, Robert Y. Stuart, Forester, Forest Service, to Henry A. Wallace, Washington, 12 July 1933, doc. 163.
111. Robert Y. Stuart to the Secretary of War, Washington, 19 July 1933, File 6500, "Miss. River," Box 873, Entry 111, Record Group 77, NARA, Suitland, Maryland.
112. Ibid.
113. President, National Forest Reservation Commission, to the President, 19 July 1933 (draft), File 6500, "Miss. River," Box 873, Entry 111, Record Group 77, NARA, Suitland, Maryland. The idea of reserving land between levees for National Forests was not a new idea. Harry N. Pharr, Chief Engineer for the St. Francis Levee District of Arkansas, had suggested in 1916 that the land between the main stem Mississippi River levees be converted to National Forests. See U.S. Congress, House of Representatives, Committee on Flood Control, Hearings, *Floods of the Lower Mississippi River*, 64th Cong., 1st sess., 1916, pp. 176–77.
114. Brown memorandum to the Secretary of War, 26 July 1933, File 6500, "Miss. River," Box 873, Entry 111, Record Group 77, NARA, Suitland, Maryland.
115. Secretary of War to the Secretary of Agriculture, n.d., File 6500, "Miss. River," Box 873, Entry 111, Record Group 77, NARA, Suitland, Maryland.
116. On 23 October 1933, Stuart died after falling from his seventh floor office in Washington. Whether it was a suicide or an accidental death was not resolved, although all agreed that the pressures of his office contributed to his death. See Michael Williams, *Americans and Their Forests* (Cambridge: Cambridge University Press, 1989), p. 464.
117. On Roosevelt's conservation philosophy, see *ibid.*, pp. 463–65; Joseph L. Arnold, *The Evolution of the 1936 Flood Control Act*, EP 870-1-29 (Fort Belvoir, Virginia: Office of History, U.S. Army Corps of Engineers), pp. 24–26; A. L. Riesch Owen, *Conservation Under FDR* (New York: Praeger Publishers, 1983).
118. William H. Becker, "Real Estate Policy and the Mississippi River and Tributaries Project," (Chapter 2 of an unpublished history of the civil works real estate policy from 1918 to 1944, OH HQUSACE), p. 27; *United States v. Sponenbarger*, 308 U.S. 256 (1939).

Chapter 6

Louisiana and Mississippi: The Battle Over Floodways

1. For more on the relationship between Long and Harrison, see Williams, *Huey Long*, pp. 680–82, and Michael Barone, *Our Country*, p. 82.
2. On this, see Martin Reuss, "Coping with Uncertainty: Social Scientists, Engineers, and Federal Water Resources Planning," *Natural Resources Journal* 32 (winter 1992): 112–16; Maass, *Muddy Waters*, pp. 51–52; Martin Reuss and Paul K. Walker, *Financing Water Resources Development: A Brief History*, EP 870-1-13 (Washington, D.C.: Historical Division, Office of Administrative Services, Office of the Chief of Engineers, 1983), p. 14. On the creation of the TVA, see Cowdrey, *This Land, This South*, pp. 152–56.
3. For more on this project, see Robert Kelley, *Battling the Inland Sea: American Political Culture, Public Policy, and the Sacramento Valley, 1850–1986* (Berkeley: University of California Press, 1989).

4. U.S. Congress, House of Representatives, Committee on Flood Control, *Comprehensive Flood-Control Plans*, 75th Cong., 3d sess., 15 April 1938, p. 871.
5. Ibid., p. 872.
6. *Congressional Record*, 1938, vol. 83, p. 8603, as cited in Theodore M. Porter, *Trust in Numbers: The Pursuit of Objectivity in Science and Public Life* (Princeton: Princeton University Press, 1995), p. 156.
7. U.S. Congress, House of Representatives, Committee on Flood Control, *Flood-Control Works in the Alluvial Valley of the Mississippi River*, 74th Cong., 1st sess., 12 February 1935, Com. Doc. 1. For a history of Ferguson's cutoff projects, see Brigadier General H. B. Ferguson, *History of the Improvement of the Lower Mississippi River*. For other sources on the subject, see Reuss, "Andrew A. Humphreys and the Development of Hydraulic Engineering," p. 28, footnote 101.
8. House Committee, *Flood Control in the Mississippi Valley*, Markham testimony, p. 2.
9. U.S. Congress, House of Representatives, *Development of the Rivers of the United States: Message from the President of the United States Transmitting a Preliminary Report*, 73d Cong., 2d sess., 4 June 1934, H. Doc. 395.
10. Letter cited in a speech by Senator Joseph T. Robinson (D-Ark.), the Senate Majority Leader, on 20 April 1936. *Congressional Record*, 74th Cong., 2d sess., vol. 80, part 5, p. 5680.
11. House Committee, *Flood-Control Works in the Alluvial Valley of the Mississippi River*, Com. Doc. 1.
12. On Bowman, see "Underground Eye for Army Engineering in Flood Work," *New Orleans Sunday Item-Tribune*, 11 October 1936. On Dean, see "Service in New Orleans of Lt. Col. John H. Carruth, C.E., 1933-1936," attachment to letter from Carruth to Albert Cowdrey, 30 September 1971 (copy), OH HQUSACE.
13. *Flood Control in the Mississippi Valley*, Markham testimony, p. 45.
14. *Congressional Record*, 74th Cong., 2d sess., vol. 80, part 5, p. 5679; House Committee, *Flood-Control Works in the Alluvial Valley of the Mississippi River*, Com. Doc. 1; Norman Moore, *Improvement of the Lower Mississippi River and Tributaries, 1931-1972* (Vicksburg: Mississippi River Commission, 1972), p. 11.
15. *Flood Control in the Mississippi Valley*, Markham testimony, p. 3.
16. "Flood-Control Works in the Alluvial Valley," p. 10.
17. Ibid., pp. 9-10; *Flood Control in the Mississippi Valley*, Markham testimony, pp. 4, 44-45; and Ferguson testimony, p. 75; U.S. Army Corps of Engineers, Waterways Experiment Station, WES Technical Memorandum No. 2-275, *Combined Control Structure and High-Level Crossing—Morganza Floodway. Model Investigation* (Vicksburg, 1949), pp. 1-2; Moore, *Improvement of the Lower Mississippi River*, p. 153.
18. "Flood-Control Works in the Alluvial Valley," p. 6.
19. Ibid., p. 7; *Congressional Record*, 74th Cong., 2d sess., vol. 80, part 5, p. 5621 (17 April 1936); Arnold, *Evolution of the 1986 Flood Control Act*, p. 48.
20. State of Louisiana, Board of State Engineers, to Congressman Riley J. Wilson, Chairman, Flood Control Committee, New Orleans, 2 April 1935, as reprinted in *Flood Control in the Mississippi Valley*, p. 235.
21. Overton to Markham, 29 November 1935; Overton to the Honorable Will M. Whittington, 2 December 1935; Overton to the Honorable F. C. Claiborne, 3 December 1935; Joseph E. Ransdell to Overton, 5 December 1935, with enclosed article, "Spillway Opposed (sic) at Meeting at Tallulah, Louisiana, March 21," newspaper not identified; Overton to Whittington, 9 December 1935; Overton to the

Honorable Lamar Williamson, 9 December 1935; Overton to Mr. Mills (?), 11 December 1935; Lamar Williamson to Overton, 24 December 1935, "Flood Control Act of 1936, HR 9411," Overton Papers. The title of this file is misleading. The Flood Control Act of 1936 usually refers to the omnibus water resources act passed that year. The act that Overton oversaw is generally called the Overton Act.

22. The entire draft legislation is printed in U.S. Congress, Senate, Committee on Commerce, *Flood Control in the Lower Mississippi Valley*, 74th Cong., 2d sess., 27 January 1936, pp. 1-2.

23. Lamar Williamson (sending along Robinson's comments) to Overton, 23 December 1935; Overton to Fred Hudson, Jr., 30 December 1935; S. 3531, 74th Cong., 2d sess., 9 January 1936 (Overton Bill). See "Flood Control Act of 1936, HR 9411." A copy of the bill is in "Chronological Files to 1940," Overton Papers.

24. Lamar Williamson to Overton, 24 December 1935; Williamson to Overton, 13 January 1936, Fred Hudson, Jr., to Overton, 14 January 1936, "Flood Control Act of 1936, HR 9411," Overton Papers. Hudson was also president of the Red River, Atchafalaya, and Bayou Boeuf Levee District.

25. Markham outlined his recommendations in testimony before the Senate Committee on Commerce. See Senate Committee, *Flood Control in the Lower Mississippi Valley*, 27 January 1936, pp. 63-68.

26. Lamar Williamson to Overton, 17 January 1936; Fred Hudson, Jr., to Overton, 18 January 1936 (two letters), "Flood Control Act of 1936, HR 9411," Overton Papers. Hudson particularly liked Markham's suggestion that the legislation provide for possible use of the floodways for national forests or wildlife refuges, in which case, the Corps would provide funds to the Department of Agriculture for land purpose in lieu of using the money to purchase flowage easements.

27. Steve Barbre, Chairman of the Parish Board of Equalization, Point Coupee Parish, to Overton, 2 March 1936; Overton to Barbre, 7 March 1936 (regarding Angola gauge); Overton to Mrs. Alice A. Sharp, 13 January 1936; Oliver S. Livaudais to Overton, 15 January 1936; Overton to Livaudais, 18 January 1936 (regarding levee setbacks); R. E. Overman, President, Arkansas River Valley Association, to Overton, 15 February 1936 (enclosing petition recommending construction of White and Arkansas River reservoirs from the multi-state association); Lamar Williamson to Congressman John L. McClellan, 15 January 1936 (copy); Congressman John E. Miller of Arkansas to Overton, 13 January 1936; Overton to Congressman Miller, 16 January 1936 (regarding Miller's opposition to Markham's plan and his desire to authorize reservoirs in the White River Basin); Overton to Markham, 11 March 1936; Markam to Overton, 12 March 1936 (regarding distinctions to be drawn between the White and Arkansas river basins on one hand and the Yazoo and St. Francis river basins on the other); T. D. Gresham, General Counsel, Texas and Pacific Railway Company, to Overton, 21 February 1936; Overton to Gresham, 21 February 1936, "Flood Control Act of 1936, HR 9411," Overton Papers. Overton inserted Markham's 12 March letter in the *Congressional Record*, 74th Cong., 2d sess., vol. 80, part 5, p. 5623 (17 April 1936).

28. *Congressional Record*, 74th Cong., 2d sess., vol. 80, part 5, p. 5621 (17 April 1936); Brigadier General G. B. Pillsbury, Acting Chief of Engineers, to Overton, 23 March 1936, "Flood Control Act of 1936, HR 9411," Overton Papers. Senator Vandenberg made it clear that without the cap on expenditures for flowage rights and levee rights-of-way he would have opposed the bill on the Senate floor. See *Congressional Record*, 74th Cong., 2d sess., vol. 80, part 5, p. 5776 (21 April 1936).

29. H.R. 9133, 15 August 1935; Markham to Riley Wilson, 15 August 1935, both in File 7402, "Miss. R." 3253, Box 900, Entry 111, Record Group 77, U.S. NARA, Suitland, Maryland.

30. The Markham quotation comes from Kemper, *Rebellious River*, p. 212. Kemper was particularly suspicious about Markham's position. See also pp. 212–13; and Becker, "Real Estate Policy and the Mississippi River," p. 47.

31. Cited in Kemper, *Rebellious River*, p. 212.

32. Arnold, *Evolution of the 1936 Flood Control Act*, pp. 48–49, 83; *Congressional Record*, 74th Cong., 2d sess., vol. 80, part 4, pp. 4410–11 (26 March 1936).

33. *Congressional Record*, 74th Cong., 2d sess., vol. 80, part 7, pp. 7738–59 (21 May 1936).

34. Ibid., pp. 7781–89 (22 May 1936).

35. Poe, "John Holmes Overton," p. 74.

36. One example of the situation of some Atchafalaya Basin residents is given in a letter from J. Estine Plauche of Hamburg to Senator Overton, 23 June 1936, "Chronological Files to 1940," Overton Papers.

37. Kemper, *Rebellious River*, pp. 218–20; *Report of the Board of State Engineers of the State of Louisiana to His Excellency, Richard W. Leche, Governor of Louisiana, From April 1st 1936 to January 1st 1938* (Baton Rouge, 1938), p. 48.

38. Section 5 of Act No. 12, State of Louisiana, approved 29 June 1936. Copy in File 7402, "L. Miss. R." 168 Box 738, Entry 111, Record Group 77, NARA, Suitland, Maryland.

39. Summaries of correspondence regarding the implementation of real estate procedures in the floodways can be found in the record cards contained in File 6500, "L. Miss. R.-Morganza Floodway" and "L. Miss. R.-Eudora Floodway," Boxes 202–03, Entry 108, Record Group 77, NARA, Suitland, Maryland. Also in the Suitland archives, see Overton to Graham and Tolson (copy), 7 June 1937; General Pillsbury to Senator Ellender, 12 June 1937; landowner petition to Overton and Ellender, 12 June 1937; Report on meeting of landowners, 7 July 1937; Markham to Ellender, 19 July 1937, all in File 6500, "Lower Miss. River-West Atchafalaya Floodway," part 1, Box 783, Entry 111, Record Group 77, NARA, Suitland, Maryland. Also at Suitland, see Representative A. Leonard Allen (D-La.) to Markham, 3 June 1937; Overton to Markham, 15 June 1937; Markham to Senator Pat Harrison (D-Miss.), 8 June 1937, all in File 6500, "L. Mississippi R.-Eudora Floodway," part I, Box 757, Entry 111, Record Group 77, NARA, Suitland, Maryland.

40. Markham to Overton, 1 July 1937; Markham to Ferguson, 9 July 1937 (telegram); Overton to B. F. Young, St. Joseph, Louisiana, 9 July 1937, all in File 6500, "L. Mississippi R.-Eudora Floodway," part I, Box 757, Entry 111, Record Group 77, NARA, Suitland, Maryland. Also in Suitland, see the summary of the communication, Overton to Markham, 13 July, in which Overton advises Markham that he has advised the Governor of Louisiana, the Chief State Engineer, and three levee board presidents to cooperate with the federal government in obtaining flowage easements. File 6500, "L. Miss. R.-Morganza Floodway," Record Card No. 7, Box 202 (record cards), Entry 108, Record Group 77, NARA, Suitland, Maryland.

41. Percentages derived from memorandum, Ferguson to Markham, 10 July 1937, subject: Options Under the Overton Act, File 6500, "Miss. R.-Eudora Floodway," part I, Box 757, Entry 111, Record Group 77, NARA, Suitland, Maryland.

42. *Report of the Board of State Engineers...From April 1st 1936 to January 1st, 1938*, p. 48.

43. U.S. Congress, House of Representatives, Committee on Flood Control, *Comprehensive Flood-Control Plan For Ohio And Lower Mississippi Rivers: Letter from the President of the United States and Report of the Chief of Engineers*, 75th Cong., 1st sess., 1937, Com. Doc. 1, p. 3.
44. Reuss, *Army Engineers in Memphis District*, p. xxiii.
45. House Committee, *Comprehensive Flood-Control Plan for Ohio and Lower Mississippi Rivers*, p. 10.
46. Memorandum by Ferguson, 15 February 1937, Harley B. Ferguson Papers, Southern Historical Collection, University of North Carolina Library, Chapel Hill, North Carolina.
47. Ibid.
48. House Committee, *Comprehensive Flood-Control Plan for Ohio and Lower Mississippi Rivers*, pp. iii–iv. Roosevelt's letter is also reprinted in Nixon, *Franklin D. Roosevelt and Conservation*, II:47–49, doc. 618. Although the President immediately requested an interagency review of Markham's report, no comprehensive review ever materialized. See *ibid.*, II:49–50, 211–14, Roosevelt to Harry H. Woodring, Secretary of War, 28 April 1937, doc. 619; Roosevelt to Harold L. Ickes, Secretary of the Interior, 28 April 1937, doc. 620; Daniel W. Bell, Acting Director, Bureau of the Budget, to Roosevelt, 22 April 1938, doc. 775. Bell noted that Markham's report had "as yet been only superficially reviewed" and that the Natural Resources Committee's (an Executive Branch agency created by Roosevelt) intention to present an alternative was hampered by lack of money and would require, in any event, several years to complete. See *ibid.*, II:213.
49. Nixon, *Franklin D. Roosevelt and Conservation*, II:68–71, message to Congress (in which Roosevelt proposes the establishment of seven regional natural resource authorities), 3 June 1937, doc. 636.
50. Lieutenant Colonel William F. Thompkins, Second New Orleans District Engineer, to Ferguson (marked "confidential"), 20 September 1937, Harley B. Ferguson Papers, Southern Historical Collection, University of North Carolina Library, Chapel Hill, North Carolina. In this letter, Thompkins discusses a dinner conversation he had with Overton and the WPA administrator for Louisiana.
51. Quoted in Poe, "John Holmes Overton," p. 77.
52. Quoted in Paul Wooten, "Woodring Favors Starting Work in Morganza Flood Control Project," *New Orleans Times-Picayune*, 15 March 1938, p. 1.
53. Poe, "John Holmes Overton," p. 77. Secretary of War Harry H. Woodring expressed his department's and the Bureau of the Budget's approval of the Overton Bill in a letter to Senator Royal S. Copeland, Chairman of the Senate Committee on Commerce, 9 March 1938. The letter is reprinted in House Committee, *Comprehensive Flood-Control Plans*, p. 824.
54. Quoted in Paul Wooten, "Morganza Flood Work Necessary, experts Declare," *New Orleans Times-Picayune*, 30 March 1938, p. 1. For more on Whittington's position, see "Easement Options Delay Floodways," *Engineering News-Record* 120, 4 (27 January 1938), 129.
55. Paul Wooten, "Officer of Army Upholds Eudora Floodway Plans," *New Orleans Time-Picayune*, 5 April 1938, p. 1.
56. House Committee, *Comprehensive Flood-Control Plans*, 15 April 1938, Overton testimony, pp. 816–19; and Schley testimony, pp. 827–28 and 843–44. The Corps calculated that purchase in fee simple would cost \$4 million more, evenly split between the Morganza and the West Atchafalaya floodways, and \$10 million more in the Eudora Floodway.

57. For copies of Bilbo's and Miller's amendments, as well as the War Department's letter objecting to Miller's, see *ibid.*, pp. 823-26. For Whittington's position on condemnation, see *ibid.*, pp. 938-39. Miller evidently envisioned payment for flowage rights in the Red River backwater area, which would be subject to floodwater flowing south out of the Eudora Floodway.

58. *Ibid.*, pp. 935; and, for Overton's testimony, p. 971.

59. *Ibid.*, pp. 935-36, 942. Actually, Ferguson had testified that the cutoffs increased the carrying capacity to a maximum of 2,650,000 cfs, but he clearly thought this number theoretical since it depended on all levees being up to grade—and many still were not—and that they would not break. See *ibid.*, pp. 51-58.

60. U.S. Congress, House of Representatives, Committee on Flood Control, *Comprehensive Flood-Control Plans and Works for Reservoirs, Levees, and Floodwalls*, 75th Cong., 3d sess., 13 May 1938, Report 2353, pp. 21-24; "Spillway Tilt Won By Pact," *Baton Rouge Progress*, 13 May 1938, p. 1; for the actual legislative language, see *Congressional Record*, 75th Cong., 3d sess., vol. 83, part 6, pp. 7157-58 (19 May 1938). The stipulation that the Wax Lake Outlet be completed before the Morganza Floodway could be operated was not a problem since all the necessary options for Wax Lake had already been obtained by September 1937, and excavation began two months later. The Corps completed work on the project in 1943. See "All Options are Obtained for Atchafalaya Outlet," *Engineering News-Record* 119,10 (2 September 1937), 406; Moore, *Improvement of the Lower Mississippi*, pp. 154-55.

61. *Congressional Record*, 75th Cong., 3d sess., vol. 83, part 8, pp. 8600-01 (9 June 1938); Poe, "John Holmes Overton," p. 82.

62. Poe, "John Holmes Overton," p. 83; U.S. Congress, House of Representatives, Committee on Flood Control, *Flood Control on the Lower Mississippi River*, 77th Cong., 1st sess., 14 August 1941, H. Doc. 359.

63. House Committee, *Flood Control on the Lower Mississippi River*, pp. 28-29.

64. *Ibid.*, pp. 29-33.

65. Schley to the Secretary of War, 2 April 1941, in *ibid.*, p. 2.

66. *Ibid.*, p. 3.

67. S. 3913, 76th Cong., 3d sess.; Overton to Judge B. F. Young, President, Fifth Louisiana Levee Board, 6 April 1940, "Chronological Files to 1940," Overton Papers.

68. S. 705, 77th Cong., 2d sess., 3 February 1941, "Flood Control Act of 1941, HR 9411," Overton Papers.

69. Poe, "John Holmes Overton," p. 84.

70. Whittington to Tyler (copy), 14 May 1941; Overton to Tyler (copy), 14 May 1941; Tyler to Overton, 17 May 1941, all in the "Flood Control Act of 1941, HR 9411," Overton Papers.

71. Overton to the Honorable Ohmer C. Burnside, Lake Village, Arkansas, and the Honorable Howard Clayton, Sheriff, Arkansas City, Arkansas, 19 May 1938; Dewitt L. Pyburn, Director, Louisiana Department of Public Works, to Overton (telegram), 22 May 1938; Burnside to Overton, 24 May 1941; Overton to Burnside, 28 May 1938 (telegram), Overton's press release, 29 May 1941; Paul Wooten, "Dispute of Long Standing Between Two States Over Levees Is Settled in Bill," *New Orleans Times-Picayune*, 30 May 1938, pp. 1 and 14; Overton to "Dear Sir" (form letter expressing thanks for support), 2 June 1941, all in the "Flood Control Act of 1941, HR 9411," Overton Papers.

72. ARCE, 1940, II, part 1, p. 2270.

73. "Offer to Sell Easements, Morganza Floodway," Deed to Tract #48, Morganza Floodway, owed by B. W. Crowe (c. September 1938), Box 87, Accession 76A-1429, Record Group 77, NARA, Fort Worth, Texas.

74. Ibid.

75. Cited from a typical deed by Melanee Gaudin, "The Legal History of the Atchafalaya Basin: Real Estate Acquisitions in the Morganza, West and Lower Atchafalaya Floodways" (paper prepared for Professor Oliver Houck, Tulane University Law School, May 1982), p. 27.

76. Warren Rogers, Jr., "Morganza Floodway is Now Vast, Desolate Wilderness," *Baton Rouge Morning Advocate*, 7 January 1951, p. 6-B.

77. As reported in ibid. The law student was Melanee Gaudin. See note 75.

78. U.S. Army Corps of Engineers, Mississippi River Commission, *Progress Report, Flood Control Work, Mississippi River and Tributaries, September and November 1940* (Vicksburg), pp. 5 and 7, respectively. MRC Library, Vicksburg, Mississippi.

79. Major G. B. Troland, New Orleans District, to President, Mississippi River Commission, 20 January 1939, subj: Request for approval of general type of high-level crossing to be provided for the railroads and the highways over the Morganza Floodway, and third Indorsement, Lieutenant Colonel William F. Tompkins, New Orleans District Engineer, to President, Mississippi River Commission, 19 December 1938, subject as above, all in File 3230, Box 18, Mississippi River Commission records, Vicksburg, Mississippi.

80. ARCE, 1940, II, part 1, pp. 2270-71; correspondence concerning highway and railroad locations can be found in File 3230, Box 18, Mississippi River Commission records, Vicksburg, Mississippi. The common embankment to carry both the Texas and Pacific railway and State Highway 30 across the floodway was jointly designed by the railway company and highway commission.

81. "Morganza Floodway, Although Not Complete, Is Usable in Emergency," *Baton Rouge State-Times*, 20 December 1944, page 1-B; Harry Hondros, "Crossing Over Morganza Floodway Is Completed," *Baton Rouge State-Times*, 25 June 1948, p. 2-A.

82. Lieutenant Colonel R. D. King, Director, Waterways Experiment Station, to the President, Mississippi River Commission, 22 April 1949, subj: Quarterly Progress Report on U.S. Highway 71 and 190 Embankments Across West Atchafalaya Floodway," in File 800.913, "Morganza and West Atchafalaya High-Level Crossing," vol. 2, Main File, Mail and Records Section, Mississippi River Commission, Vicksburg, Mississippi.

83. "Floodway Need Not Be Opened," *New Orleans Times-Picayune*, 9 April 1945, p. 1.

84. President, MRC, to the Director, WES, 6 March 1950, subj: Report of Model Tests, Morganza Floodway Control Structures, in File 800.913, "Morganza Floodway Control Structure," vol. 2, Main File, Mail and Records Section, Mississippi River Commission, Vicksburg, Mississippi; R. D. King, Director, WES, to the President, MRC, 5 August 1947, subject: Progress Report on Model Study of Morganza Floodway Control Structures, in File 800.913, "Morganza Floodway Control Structure," vol. 1, Main File, Mail and Records Section, Mississippi River Commission, Vicksburg, Mississippi. See also U.S. Army Corps of Engineers, *Combined Control Structure and High-Level Crossing—Morganza Floodway*.

85. Warren Rogers, Jr., "Morganza Floodway is Now Vast, Desolate Wilderness," *Baton Rouge State-Times*, 17 October 1951, p. 1-B; Moore, *Improvement of the Lower Mississippi River*, pp. 153-54.

Chapter 7

The Old River Problem

1. *Report of the Board of State Engineers of the State of Louisiana to His Excellency, Samuel H. Jones, Governor of Louisiana, From January 1st 1938 to January 1st, 1940* (Baton Rouge, 1940), pp. 23–26; Louisiana Department of Public Works, *First Progress Report*, pp. 198, 244; U.S. Army Corps of Engineers, Mississippi River Commission, *Progress Report, Flood Control Work, Mississippi River and Tributaries, December 1941* (Vicksburg), p. 6. By an executive order issued on 13 January 1941, the Governor of Louisiana created the Louisiana State Department of Public Works, which among its functions included those of the former Board of State Engineers.

2. This and the following few paragraphs are based on the following sources: Martin Reuss, "Along the Atchafalaya: Challenging the Wisdom of Solomon," *Environment* 30, 4 (May 1988): 9–10; McPhee, *Control of Nature*, p. 5; Leo M. Odom, "Atchafalaya Diversion and Its Effect on the Mississippi River," *Transactions*, 116 (1951): 503–13; Latimer and Schweizer, *Atchafalaya River Study*, I:21. Some controversy remains about the impact on New Orleans and Baton Rouge should the Mississippi River abandon its present channel. Some argue that the value of New Orleans and Baton Rouge as ports would significantly deteriorate, while others take a more optimistic view. I am indebted to James Tuttle, Chief, Engineering Division, Lower Mississippi Valley Division, for sharing his thoughts with me on the matter.

3. Odom, "Atchafalaya Diversion," p. 513.

4. For information on problems of the backwater areas, see House Committee, *Flood Control on the Lower Mississippi River*, pp. 37–38, 41.

5. *Ibid.*, p. 41.

6. Mississippi River Commission, "Report on Red River Backwater Protection; Closure of Old River in Louisiana," unpublished draft, 30 September 1943, MRC Technical Library, Vicksburg, Mississippi. Of the eight towns in the Red River backwater region with populations of more than 1,000, the largest was Monroe, Louisiana, with a population in 1940 of 28,309.

7. *Ibid.*

8. This was conjectured by Latimer and Schweizer in their *Atchafalaya River Study*, I:D18.

9. McPhee, *Control of Nature*, p. 24; Moore, *Improvement of the Lower Mississippi River*, pp. 204–05; ARCE, 1945, II, part 1, p. 2456.

10. Harold N. Fisk, *Geological Investigation of the Alluvial Valley of the Lower Mississippi River* (Vicksburg: Mississippi River Commission, 1944), p. 1; Moore, *Improvement of the Lower Mississippi River*, p. 67.

11. Fisk, *Geological Investigation of the Alluvial Valley*, p. 1; Ben H. Fatherree, "The Earth Inherited: The History of Geotechnical Engineering at the U.S. Army Corps of Engineers Waterways Experiment Station" (unpublished draft manuscript, Vicksburg: Waterways Experiment Station, 1994), pp. 223–32.

12. Fisk, *Geological Investigation of the Alluvial Valley*, p. 55; Moore, *Improvement of the Lower Mississippi*, p. 69; Ben H. Fatherree, "History of the WES Hydraulics Laboratory," unpublished draft manuscript (Vicksburg: Waterways Experiment Station, 1994), pp. 133–37. Fisk summarizes his important findings in "Mississippi River Valley Geology Relation to River Regime," *Transactions*, 117 (1951): 667–89.

13. Fisk to Tyler, 9 July 1945 (copy), series 1945, A-7, floodways, file on "Protection of Red River backwater by a control structure in Old River, & Morganza

Floodway & Bonnet Carré—Memo,” Technical Records, MRC. The document is reprinted in Latimer and Schweizer, *Atchafalaya River Study*, I:D21-D23.

14. Memorandum for General Tyler from Lieutenant Colonel C. P. Lindner, subj: Supplement to Memorandum entitled “Frequency of Flooding of Red River Backwater Area with Control Structure at Old River, 16 July 1945, series A-7, (1945), floodways, Technical Records, MRC. Reprinted in Latimer and Schweizer, *Atchafalaya River Study*, I:D24-D26. Lindner served as director of WES during the last three months of 1945.

15. “Memorandum Report on Protection of Red River Backwater by a control structure in Old River, and Operation of Morganza Floodway and Bonnet Carré Spillway,” 13 August 1994, file on “Protection of Red River backwater by a control structure in Old River, & Morganza Floodway & Bonnet Carré—Memo,” series A-7 (1945), floodways, Technical Records, MRC. Reprinted in Latimer and Schweizer, *Atchafalaya River Study*, I:D37-D39.

16. Information on Kramer is from the biographical files in OH HQUSACE.

17. Memorandum, Kramer to Tyler, 24 July 1945, subj: “Minority Report” on Proposed Control Structures at Old River and Morganza, reprinted in Latimer and Schweizer, *Atchafalaya River Study*, I:D27-D37.

18. Ibid.; Fatherree, “The Earth Inherited,” pp. 236-37; Major General Samuel D. Sturgis, Jr., Chief of Engineers, to Congressman Hale Boggs, 26 April 1954, as reprinted in U.S. Congress, House of Representatives, Committee on Public Works, Subcommittee on Flood Control, *Hearings on H.R. 9859*, vol. 3, 83d Cong., 1st and 2d sess., pp. 793-95, 27 May 1954.

19. “Atchafalaya No Cause for Alarm,” *New Orleans Times-Picayune*, 15 January 1949, p. 1.

20. House Subcommittee, *Hearings on H.R. 9859*, Larcade testimony, p. 822.

21. U.S. Congress, Senate Committee on Public Works, *Atchafalaya River, LA.*, 82d Cong. 1st sess., 1 August 1951, S. Doc. 53, p. viii.

22. House Subcommittee, *Hearings on H.R. 9859*, III:822-40 (includes reprint of 25 May 1949 hearings).

23. U.S. Congress, House of Representatives, Committee on Public Works, *Laws of the United States Relating to the Improvement of Rivers and Harbors*, 89th Cong., 1st sess., Doc. 182, p. 2774.

24. “Increase Shown in Atchafalaya,” *New Orleans Times-Picayune*, 19 February 1952, p. 8.

25. Pick’s directives and accompanying memorandum are reprinted in Latimer and Schweizer, *Atchafalaya River Study*, I:4-6.

26. Ibid., 6-7; Fisk, *Geological Investigation of the Atchafalaya Basin*, I:i-ii.

27. Latimer and Schweizer, *Atchafalaya River Study*, I:1.

28. Fisk, *Geological Investigation of the Atchafalaya Basin*, I:141.

29. “Conferences to Consider Means of Preventing the Atchafalaya from Capturing the Mississippi,” 19 May 1953 (no author), Folder 326, Box 51, Samuel D. Sturgis, Jr. Papers, OH HQUSACE [hereinafter cited as Sturgis Papers]. Sturgis was Chief of Engineers from 1953 to 1956.

30. “Consultants Conferences, Atchafalaya River Study, 1951 & 1952 Minutes,” p. 1, Technical Records, MRC.

31. Hunter Rouse, *Hydraulics in the United States*, pp. 155-56; Elizabeth Roboz Einstein, *Hans Albert Einstein: Reminiscences of His Life and Our Life Together*, with a foreword by Ronald W. Clark (Iowa City, Iowa: Institute of Hydraulic Research, University of Iowa, 1991), p. 80. The Hans Albert Einstein Papers are located at the Water Resources Center Archives at the University of California, Berkeley. They include

several memorandums and official documents pertaining to the Atchafalaya and Old rivers. I am indebted to Ms. Cornelia (Connie) Mutel and Professor Robert Ettema of the Iowa Institute of Hydraulic Research, who are writing a biography of Einstein, for sharing with me their notes and perceptions. For further information on both Straub and Einstein, see Winfield Scott Downs and Edward N. Dodge, eds. *Who's Who in Engineering* (New York City: Lewis Historical Publishing Co., Inc., 1959).

32. Rouse, *Hydraulics in the United States*, p. 115. My characterization of Straub is based on several informal conversations with his colleagues and students. I am especially indebted to Professor John McNown, Straub's first Ph.D. student, for sharing his perceptions of his mentor.

33. "Consultants Conferences," pp. 2-4.

34. Ibid., pp. 6-9.

35. Ibid., pp. 9-11.

36. Ibid., 9 February 1952, p. 8.

37. Ibid., pp. 9-12.

38. Ibid., pp. 18, 28.

39. Ibid., pp. 21, 32.

40. Ibid., pp. 36-58.

41. Ibid., pp. 65-68.

42. Ibid., 25 August 1952, pp. 3-4. A lower sill or crest elevation also meant a deeper and more expensive channel.

43. Ibid., p. 10.

44. Ibid., pp. 16-17.

45. Ibid., pp. 22-23.

46. Ibid., p. 35.

47. Ibid., p. 29.

48. Ibid., pp. 29-30.

49. Ibid., p. 38.

50. Ibid., pp. 40-41.

51. Ibid., 29 September 1952, p. 10.

52. Ibid., pp. 13-14.

53. Ibid., pp. 18-24.

54. Ibid., pp. 26-28.

55. Ibid., pp. 22-62.

56. "Conferences to Consider Means of Preventing the Atchafalaya from Capturing the Mississippi."

57. "Consultants Conferences, Atchafalaya River Study, 1951 & 1952 Minutes," p. 39, 30 September 1952, Technical Records, MRC.

58. Ibid., p. 43.

59. Ibid.

60. Ibid., p. 50.

61. On early Corps opposition to modeling, see Morgan, *Dams and Other Disasters*, pp. 185-239; Ben H. Fatherree, "History of the WES Hydraulics Laboratory," unpublished draft manuscript (Vicksburg: Waterways Experiment Station, 1994), pp. 12-16.

62. "Conferences to Consider Means of Preventing the Atchafalaya from Capturing the Mississippi." For details on the WES geology report, see Fatherree, "The Earth Inherited," pp. 238-40. See also Willard J. Turnbull and Woodland G. Shockley, "Foundation Design," *Transactions*, 123 (1958): 1160-71. This article is one of four

symposium articles published in the volume on the subject of the Old River Diversion Control.

63. U.S. Army Corps of Engineers, Waterways Experiment Station, *Old River Closure Structures; Model Investigation*, WES Technical Memorandum No. 2-276 (Vicksburg: Waterways Experiment Station, 1949); U.S. Army Corps of Engineers, Waterways Experiment Station, *Old River Control Structure Sediment Diversion; Hydraulic Model Investigation*, WES Technical Memorandum No. 2-388 (Vicksburg: Waterways Experiment Station, 1954); Ben H. Fathertree, "History of the WES Hydraulics Laboratory," p. 183.

64. Hardin to Major General Sturgis, 28 July 1953, Folder 326, Box 51, Sturgis Papers.

65. House Subcommittee, *Hearings on H.R. 9859*, III:844.

66. Hardin to the Chief of Engineers, subj: Old River Closure, 28 July 1953; Latimer to Hardin, subj: Comments on Proposed Letter to Chief of Engineers on Old River Closure, 28 July 1953, both in File 800.92, (Old River Control) "Examination and Survey Report on Old River Control," vol. I: July 1953, Records Holding Area, Mississippi River Commission, Vicksburg, Mississippi.

67. Sturgis to Hardin, 6 August 1953, Folder 326, Box 51, Sturgis Papers; Major General B. L. Robinson, Deputy Chief of Engineers for Construction, to Hardin, subj: Old River Closure, 7 August 1953, File 800.92, (Old River Control) "Examination and Survey Report on Old River Control," vol. I: July 1953, Records Holding Area, Mississippi River Commission, Vicksburg, Mississippi.

68. Unsigned directive (c. 25 August 1953), in *ibid.*

69. John R. Hardin, "Mississippi-Atchafalaya Diversion Problem," *The Military Engineer* 46, 310 (March-April 1954): 86-92.

70. Hardin to Moore, subj: Operation of Proposed Old River Control System, 16 September 1953, in File 800.92 (Old River Control), "Examination and Survey Report on Old River Control," vol. I: July 1953, Records Holding Area, Mississippi River Commission, Vicksburg, Mississippi. Hardin wrote three memorandums on the same subject on 16 September 1953. The quotation in the paragraph comes from the second of the three memorandums.

71. These letters are bound in File 800.92 (Old River Control), "Examination and Survey Report on Old River Control," vol. I: July 1953, Records Holding Area, Mississippi River Commission, Vicksburg, Mississippi.

72. John H. O'Neill, Director, Division of Public Health Engineering, State of Louisiana, to Colonel Mitchim, 28 October 1953 (copy); A. Baldwin Wood, General Superintendent, Sewerage and Water Board of New Orleans, to Hardin, 10 November 1953; Hardin's note, no date, all in *ibid.*

73. The internal documents are in *ibid.* and in an accompanying manila envelope labeled File 800.92 (Old River Control) w/ltr 1/27/54. On the interest of the Louisiana congressional party in the Old River lock, see the "Daily Log—Civil Works, Thursday—28 January 1954," Folder 281, OCE Daily Logs (May 1953–June 1954), Box 45, Sturgis Papers. Major General Emerson C. Itschner, the Assistant Chief of Engineers for Civil Works, reported to Sturgis, "The [Louisiana] Senators and the local delegation made it plain that they would insist upon a large lock at Port Allen and that they did not object to the construction of a large lock in Old River." The Port Allen Lock was begun in February 1955 and completed in December 1962. In September 1961, the old Plaquemine Lock was permanently closed. The final Old River report was printed as U.S. Congress, House of Representatives, *Mississippi River and Tributaries with Respect to Old River Control*, 83d Cong., 2d sess., 9 July 1954, H. Doc. 478.

74. Sessums to Hardin, January 1954, File 800.92 (Old River Control), "Examination and Survey Report on Old River Control," vol. 2, 1954, Records Holding Area, Mississippi River Commission, Vicksburg, Mississippi.
75. Ibid., Kimbel to Hardin, 12 January 1954.
76. Ibid., Vogel to Hardin, 14 January 1954.
77. House, *Mississippi River and Tributaries with Respect to Old River Control*, p. 24.
78. The letters of approval are in *ibid.* Also in *ibid.*, see the 19 March 1954 press release announcing Sturgis' approval.
79. Ibid., Itschner to Sturgis, subj: Review Report on Mississippi River and Tributaries with Respect to Old River Control, 8 April 1954.
80. House, *Mississippi River and Tributaries with Respect to Old River Control*, pp. 1-6. The report contains the formal letters from Louisiana Governor Robert F. Kennon and from various federal agencies. The Department of Agriculture did not submit comments until 17 June, and this may have delayed sending the report to Congress.
81. William H. Becker, *From the Atlantic to the Great Lakes: A History of the U.S. Army Corps of Engineers and the St. Lawrence Seaway*, EP 870-1-20 (Washington, D.C.: Historical Division, Office of the Chief of Engineers, 1984), pp. 17-18. The bills are printed in House Subcommittee, *Hearings on H.R. 9859*, III:753-55.
82. For correspondence on this political horse-trading (with references to some newspaper articles on the subject), see Hardin to Sturgis, 14 January 1954, with an attached memorandum by Sturgis, 25 January 1954, in Folder 326, "Correspondence, Lower Mississippi Valley Division, January 1953-March 1956," Box 51, Sturgis Papers. Itschner also noted the "St. Lawrence difficulties" in his memorandum to Sturgis of 8 April 1954 (see footnote 77).
83. House, Subcommittee, *Hearings on H.R. 9859*, III:762, 27 May 1954.
84. Ibid., pp. 768, 771.
85. Ibid., pp. 776-936. Russell Long, the son of Huey, was elected on 2 November 1948—one day short of his thirtieth birthday—to the seat formerly held by Senator Overton, who had died on 14 May 1948. He took his seat on 31 December 1948 and served in the Senate until 3 January 1987.
86. Ibid., p. 780.
87. House Committee, *Laws of the United States Relating to the Improvement of Rivers and Harbors*, pp. 3364-65.
88. Senate Committee, *Atchafalaya River, LA.*, p. ix.
89. Ibid., p. 20.
90. Ibid.
91. ARCE, 1956, II:1869.
92. Jean-Jacques Salomon, *Science and Politics*, trans. Noel Lindsay (Cambridge, Massachusetts: The MIT Press, 1973), p. 169. Salomon was writing of scientists and politicians, but the term equally applies to engineers and politicians.
93. Hardin to Major General Sturgis, 28 December 1954, Folder 326, Box 51, Sturgis Papers.
94. Gail Hathaway, special assistant to the Chief of Engineers, to the Chief of Engineers, 29 April 1954, subj: First Meeting of Board of Consultants on Old River Control; Minutes of First Meeting of Board of Consulting Engineers on Old River Control, 21 May 1954; both in Folder 326, Box 51, Sturgis Papers.
95. H. Valpeau Darling to General Sturgis, 28 June 1954, subj: Old River Control Board, with enclosures: Questions on Old River Control Planning and Design; Hinds

to Hardin, 3 June 1954 (copy); Hinds to Hardin, 3 June 1954 (copy), second letter of that date, all in Folder 326, Box 51, Sturgis Papers.

96. Minutes of Special Meeting on Old River Control, Folder 326, Box 51, Sturgis Papers.

97. ARCE, 1956, II:1870; ARCE, 1957, II:1844; ARCE, 1958, II:1861; Colonel Edward B. Jennings, "The Life and Death of Old River," *The Military Engineer* 56, 372 (July-August 1964): 256-57; House Committee, *Laws of the United States Relating to the Improvement of Rivers and Harbors*, p. 3528.

98. Moore, *Improvement of the Lower Mississippi River*, pp. 182-84; John R. Hardin, "The General Problem," in "Old River Diversion Control: A Symposium," *Transactions*, 123 (1958): 1131-41.

99. U.S. Army Corps of Engineers, New Orleans District, "Auxiliary Structure. Design Memorandum No. 13—General Design," August 1979, p. 11.

100. On this, see McPhee, *Control of Nature*, pp. 26-28. McPhee wrongly implies that the outflow scour hole resulted entirely from the 1973 flood. Samuel Powell, hydraulic engineer, HQUSACE, and Robert Fairless, Chief, Engineering Control Branch, New Orleans District, provided information on the impact of the 1973 flood.

101. Denise Grady, "Watch on the Mississippi," *Discover* 4, 3 (March 1983): 26.

102. McPhee, *Control of Nature*, p. 30. Major General Charles C. Noble, U.S. Army, Retired, interview by author, 22-23 September 1981, pp. 128-29.* Robert T. Fairless, "The Old River Control Project," in *Proceedings: 27th Annual Conference and Symposium*, ed. Dhamo Dhamotharan and Harry C. McWreath (Bethesda, Maryland: American Water Resources Association, 1991): 266. At Major General E. R. Heiberg's request, I attempted to verify the story that funding constraints determined the decision not to put pilings under the south guide wall, but was unable to do so.

103. U.S. Army Corps of Engineers, New Orleans District, *Old River Control* (New Orleans: 1993), p. 10.

104. Noble interview, p. 129.

105. Ibid.; Johannes L. van Beek, Ava L. Harmon, Charles L. Wax, Karen M. Wicker, *Operation of the Old River Control Structure, Atchafalaya Basin: An Evaluation from a Multiuse Management Standpoint*, EPA-600/4-79-073 (Las Vegas: U.S. Environmental Protection Agency, Environmental Monitoring and Support Laboratory, Office of Research and Development, 1979), p. 48; Fairless, "The Old River Control Project," p. 267.

106. McPhee, *Control of Nature*, pp. 49-51; U.S. Army Corps of Engineers, "Auxiliary Structure," p. 13.

107. The decision raised an interesting contradiction. The Corps had always maintained that the Old River Control Structure had been completed in 1963, but in 1982 the Corps' *Annual Report* stated that the project was only 65 percent complete. The new percentage, of course, reflected the construction of the auxiliary structure. See ARCE, 1982, pp. 42-7.

108. Ibid., 1987, pp. 42-6. The Corps estimated the cost of all the structures built at Old River since 1955 at \$306 million.

109. Fairless, "The Old River Control Project," pp. 267-68.

110. McPhee, *Control of Nature*, p. 52.

* Unless otherwise indicated, transcripts of all interviews, except telephone interviews, are available in the Research Collections of the Office of History, Headquarters, U.S. Army Corps of Engineers, Alexandria, Virginia.

111. Noble interview, p. 130.

112. Cited in McPhee, *Control of Nature*, p. 25.

Chapter 8

Let the Public Be Heard: Reconciling Multiple Objectives

1. B. E. M. Skerrett III, interview by author, Lafayette, Louisiana, 9 March 1983; Victor W. Lambou and Max W. Summers, Louisiana Wild Life and Fisheries Commission (LWLFC), to Mr. L. D. Young, Jr., Director, LWLFC, 15 August 1963, U.S. Fish and Wildlife Service Files, Lafayette, Louisiana. [Hereinafter cited as FWS.] Copies of all FWS correspondence are located in OH HQUSACE. Unless otherwise noted, the original FWS files come from the Lafayette, Louisiana, FWS field office. David Soileau, formerly of that office, provided access to the files.

2. Lambou and Summers to Young, 15 August 1963, FWS; U. S. Army Corps of Engineers, "Flood Control, Mississippi River and Tributaries, Atchafalaya Basin Floodway, Louisiana," general design memorandum (GDM), 31 July 1963, copy in New Orleans District Files [hereinafter cited as NOD]; Skerrett interview.

3. GDM, 31 July 1963, NOD; Lambou and Summers to Young, 15 August 1963, FWS.

4. Theodore B. Ford, Assistant Office Chief, Louisiana Fish and Game Division, to F. J. Brown, Mississippi River Commission, 28 September 1956, FWS; W. L. Towns, Acting Regional Director, Bureau of Sport Fisheries and Wildlife (BSFW), and Seton Thompson, Regional Director, Bureau of Commercial Fisheries (FWS), to the District Engineer, New Orleans, 1 June 1959, in U. S. Congress, House of Representatives, *Mississippi River and Tributaries Project*, Vol. VI, Annex X, 88th Cong., 2d sess., 1964, H. Doc. 308; W. L. Towns, Acting Regional Director, BSFW, to Charley Bosch, 1 March 1962, FWS; L. D. Young, Jr., to Stewart L. Udall, 29 July 1963, FWS. Bosch had long advocated land purchase as the preferred means of preventing land encroachment. He also had testified previously about the importance of giving fish and wildlife resources equal consideration with other purposes in any land or water resources program. See his testimony in Monroe, Louisiana, 19 April 1955, before the Vicksburg District Engineer in a hearing dealing with a review of the Mississippi River and Tributaries Project. Hearing proceedings on microfilm reel 3.109, Vicksburg District Files, U.S. Army Corps of Engineers, Vicksburg, Mississippi.

5. Lambou and Summers to Young, 15 August 1963, FWS; Lambou interview.

6. Skerrett interview.

7. Report of Joseph Hotard, Jr., File 1501-07, "Atchafalaya Cross Channels, Study, Working Papers, 1962," NOD.

8. Figures on real estate were compiled by the New Orleans District of the Corps of Engineers in 1976. The figures had not changed significantly since the early 1960s. See "Resumé of Real Estate Interest in the Lower Atchafalaya Basin," General Correspondence with Other Agencies, 1976, NOD.

9. Jeanne Nienaber Clarke and Daniel McCool, *Staking Out the Terrain: Power Differentials Among Natural Resource Management Agencies* (Albany: State University of New York Press, 1985), pp 82-83. The "phantom agency" comment is on p. 83.

10. Public Law 85-624, *Fish and Wildlife Coordination Act*, 2 August 1958; U. S. Congress, Senate, *Policies, Standards, and Procedures in the Formulation, Evaluation, and Review of Plans for Use and Development of Water and Related Land Resources*, 87th Cong., 2d sess., 1962, S. Doc. 97, p. 3.

11. U. S. Congress, House of Representatives, *Mississippi River and Tributaries Project*, vol. VI, Annex S; *ibid.*, Appendix 1, F. C. Gillet, Acting Regional Director, Bureau of Sport Fisheries and Wildlife (BSFW), FWS, to the District Engineer, New Orleans, 22 December 1958; Walter Gresh, Regional Director, BSFW, to Director, BSFW, 9 May 1962, FWS.
12. Louisiana House Concurrent Resolution No. 5, 24 May 1961, File 8, Box 644, Allen J. Ellender Papers, Division of Archives, Leonidas Polk Library, Nicholls State University, Thibodaux, Louisiana [hereinafter cited as Ellender Papers]; Senate Concurrent Resolution No. 62, 1962 sess., FWS.
13. Press Release, 23 March 1962, Office of Senator Russell B. Long, Washington, D.C., File 8, Box 644, Ellender Papers.
14. Trip report of Charles E. Crowther of visit to New Orleans District, 17 October 1962, FWS.
15. Thomas Kimball, Executive Director, National Wildlife Federation, to Frank P. Briggs, Assistant Secretary of the Interior, 5 February 1963, FWS.
16. Regional Director, FWS, to District Engineer, New Orleans (draft), 11 January 1963; U.S. Department of the Interior, Fish and Wildlife Service, "Fish and Wildlife Report on Atchafalaya Basin Floodway," 2 August 1963, p. 14, FWS.
17. "Flood Control, Mississippi River and Tributaries, Atchafalaya Basin Floodway, Louisiana," GDM, 31 July 1963 (with approval letters from higher headquarters attached), NOD. GDMs were required under Corps regulations so that higher authorities—the division engineer and the Chief of Engineers—could approve plans before actual construction or modification of a project. The documents discussed not only engineering plans but federal and nonfederal project costs, real estate requirements, and environmental impacts.
18. *Ibid.*; Abram V. Tunison, Assistant Director, FWS, to Regional Director, BSFW, 14 June 1963, FWS.
19. Walter A. Gresh, Regional Director, BSFW, to Director, BSFW, 13 December 1963, FWS.
20. Young to Ellender, 15 January 1964, File 14, Box 642, Ellender Papers.
21. Young to Long, 27 January 1964, File 14, Box 642, Ellender Papers.
22. Califano to Briggs, 5 February 1964, FWS.
23. Jennings to Long, 6 February 1964, File 14, Box 642, Ellender Papers.
24. Graham to Representative James H. Morrison (copy), 12 February 1964, File 14, Box 642, Ellender Papers.
25. Louisiana congressional delegation to Young, 19 February 1964, File 14, Box 642, Ellender Papers.
26. Charles Harris to Gresh, 25 February 1964, FWS.
27. Endorsement 6 to July 1963 GDM, "Flood Control, Mississippi River and Tributaries, Atchafalaya Basin Floodway, Louisiana," NOD; House, *Mississippi River and Tributaries Project*, I:13-14; Wendell E. Johnson, Chief, Engineering Division, Civil Works Directorate, to President, Mississippi River Commission, 21 July 1964, NOD; U. S. Congress, Senate, Committee on Public Works, *Public Works Authorizations, 1965, Rivers and Harbors-Flood Control and Multiple-Purpose Projects, Hearings*, 89th Cong., 1st sess., Part I, Ellsworth I. Davis testimony, 25 March 1965, p. 136.
28. Gresh to District Engineer, New Orleans, 8 July 1965, and District Engineer to Gresh, 27 July 1965, FWS.
29. Bowen to R. D. Lowe, President, General Excavation Company, Inc., 23 August 1965 (copy), File 14, Box 642, Ellender Papers.

30. Bowen to Skerrett, 10 December 1965 (copy), File 14, Box 642, Ellender Papers.
31. Skerrett to Mr. James W. Finley, Assistant to Senator Ellender, 14 December 1965 [this letter notes a 9 December letter from Finley to Skerrett, which was not found in the files], File 14, Box 642, Ellender Papers.
32. Skerrett interview.
33. Ibid.
34. Ibid.; Ellender to Bowen, 10 March 1966; Bowen to Ellender, 16 March 1966; Davis to Ellender, 30 March 1966, File 14, Box 642, Ellender Papers.
35. McBroom to Smith, 7 March 1966, FWS.
36. Skerrett interview.
37. Richard E. Eichhorn, Trip Report, 22 April 1966, FWS; Skerrett interview.
38. Bowen to Jerome Anderson, Regional Director, Bureau of Outdoor Recreation, 13 June 1966; W. L. Towns. Acting Regional Director, FWS, to Colonel Bowen, 13 September 1966, FWS.
39. U.S. Department of the Interior, Fish and Wildlife Service, *Report on Main Channel Dredging, Atchafalaya Basin Floodway, Louisiana*, 14 June 1966, FWS.
40. Skerrett interview.
41. Mike Cook, "Big Change Noted in Corps' Attitude," *Baton Rouge State-Times*, 29 September 1966, Cook Files, OH HQUSACE [hereinafter cited as Cook Files].
42. Minutes of public meeting, Morgan City, Louisiana, 28 September 1966, NOD.
43. Colonel Bowen to Major General Robert G. MacDonnell, President, Mississippi River Commission, 10 April 1967, subject: Review of Reports, Mississippi River and Tributaries Project, NOD.
44. Bowen to Ellender, 5 October 1967, File 11, Box 642, Ellender Papers.
45. Colonel Herbert R. Haar, Jr., NOD District Engineer, to Senator Ellender, 19 December 1968, File 6, Box 642, Ellender Papers; "Notice of Meeting of Greater Atchafalaya Basin Council" on 25 October 1968 (to protest total or partial closure of the Old River Control Structure). Atchafalaya Basin Outgoing Correspondence, 1974, NOD; Charles F. Buckley, Treasurer, Rapides Wildlife Association, to New Orleans District, 11 December 1968; Lamar Gibson, Director, and Herman C. Willem, Administrative Assistant, State Parks and Recreation Commission, to District Engineer, New Orleans, 30 December 1968; Leslie L. Glasgow, Director, Wild Life and Fisheries Commission, to District Engineer, New Orleans, 18 November 1968. The last three letters are in Atchafalaya Basin (Water and Land Resources), Louisiana Study, General Correspondence, 1968, NOD; Mike Cook, "Wildlife Interests Keep Eye on Atchafalaya," *Baton Rouge State-Times*, 15 January 1970, Cook Files; briefing, Colonel Thomas Sands, New Orleans District Engineer, to the staff of the Office of the Chief of Engineers, 1 April 1980, OH HQUSACE.
46. Mike Cook, "Wildlife Interests Keep Eye on Atchafalaya." Resolutions opposing changes in Old River Control Structure Operation from the Iberville Parish Police Jury, 24 March 1970; St. Landry Parish Police Jury, 7 April 1970; Pointe Coupee Parish Police Jury, 14 April 1970; West Baton Rouge Parish Police Jury, 8 June 1970; the Louisiana Wildlife Federation, 8 March 1970, Atchafalaya Basin (Water & Land Resources), Louisiana Study, General Correspondence, 1970, NOD.
47. Design Memorandum No. 33A, "Preliminary Master Plan for Public Access and Recreation," New Orleans District, 1966, Atchafalaya Basin General Correspondence File, 1971, NOD.

48. Ibid., see various attached endorsements; "Chronology of Events. Atchafalaya Basin," 11 February 1976, NOD. These recreation plans were overtaken by events the following decade and were not fully implemented.

49. See H. Con. Res. 67 and Act 612, both passed by the 1968 Louisiana Legislature.

50. Cited in Mike Cook, "Task Force Urges Establishment of Atchafalaya Recreation Area," *Baton Rouge Morning Advocate*, 26 August 1969, Cook Files.

51. Ibid.

52. Skerrett interview.

53. Ibid.

54. G. Douglas Hofe, Jr., Director, Bureau of Outdoor Recreation (BOR), Department of the Interior, 14 June 1971, FWS.

55. Skerrett interview.

56. A summary of these early resolutions and executive orders is given in the preface to the *Report to the Governor and Legislature Presented by Governor's Commission on the Atchafalaya Basin* (24 April 1972).

57. Katz to Ellender, 1 April 1971, and McKeithen to Ellender, 21 April 1971. Atchafalaya Basin (Water and Land Resources) Louisiana Study, General Correspondence, 1972 [sic], NOD; McKeithen to Rogers C. B. Morton, Secretary of the Interior, 21 April 1971, FWS.

58. Charley Bosch to "Friend" (long distribution list), 6 May 1971, FWS.

59. Skerrett interview; Mike Cook, interview by author, Baton Rouge, Louisiana, 19 January 1984.

60. Skerrett interview; see also Mike Cook, "Opinions Vary Great On Atchafalaya Basin," *Baton Rouge State-Times*, 30 March 1972, Cook Files.

61. Cook interview; *Report to Governor and Legislature*, 24 April 1972.

62. The resolution is attached to a letter from Malcolm L. Monroe to the Honorable Rogers C. B. Morton, 3 June 1971, FWS.

63. Ed Price, "Atchafalaya Basin Fight Gets Hotter," *Baton Rouge Morning Advocate*, 1 June 1971.

64. Skerrett to Secretary Rogers C. B. Morton, 19 July 1971, FWS; "Mineral Rights Question Raised," and Bucky Allen, "Sportsmen Criticize Commission," both in the *Lafayette Daily Advertiser*, 13 July 1971.

65. Hofe to Ellender, 14 June 1971 (copy), FWS.

66. Nathaniel Reed to Richard W. Bryan, 22 July 1971; Skerrett to Morton, 19 July 1971; Morton to Skerrett, 24 September 1971, FWS.

67. G. Michael Harmon, "Atchafalaya Compromise Said Major Breakthrough," *New Orleans Times-Picayune*, 28 October 1971; *Report to Governor and Legislature*, 24 April 1972.

68. Glasgow to Spencer Smith, 19 July 1971, and M. A. Marston, Assistant to the Director, FWS, to Glasgow, 24 August 1971, FWS; Skerrett interview.

69. Skerrett interview; for more on the water quality of the Atchafalaya Basin, see Johannes L. van Beek, William G. Smith, James W. Smith, and Philip Light, *Plan and Concepts for Multi-Use Management of the Atchafalaya*, Report EPA 600/3-77-062 (Las Vegas: Environmental Protection Agency, Office of Research and Development, May 1977), pp. 14-16.

70. Copies of the letters are in the FWS records.

71. Press release from Senator Ellender's office, 15 March 1972, File 13, Box 642, Ellender Papers.

72. Senator Jennings Randolph, Chairman, Committee on Public Works, U. S. Senate, to Lieutenant General Frederick J. Clarke, the Chief of Engineers, 23 March 1971. Atchafalaya Basin General Correspondence, 1972, NOD.
73. Skerrett to Ellender, 14 April 1972, File 13, Box 642, Ellender Papers.
74. Mike Cook, "Opinions Vary Greatly on Atchafalaya Basin."
75. *Report to the Governor and Legislature*.
76. Sandra Thompson, interview by author, Baton Rouge, Louisiana, 18 March 1983.
77. Mike Cook, "Conservationists Suffer Setbacks in Legislature," *Baton Rouge State-Times*, 8 June 1972, Cook Files.
78. Ibid.; House Bill No. 802, Act 365, Louisiana Legislature, approved 2 July 1972.

Chapter 9

Environmental Activists and the Corps of Engineers

1. P.L. 91-190, 42 U.S.C. 4321-47, National Environmental Policy Act of 1969.
2. For more on this point, see Lynton K. Caldwell, *Science and the National Environmental Policy Act: Redirecting Policy Through Procedural Reform* (University, Alabama: The University of Alabama Press, 1982).
3. Martin Reuss, *Shaping Environmental Awareness: The United States Army Corps of Engineers Environmental Advisory Board, 1970-1980*, EP 870-1-10 (Washington, D.C.: Historical Division, Office of Administrative Services, Office of the Chief of Engineers, 1983), p. 14. On the Tennessee-Tombigbee Waterway, see Jeffrey K. Stine, *Mixing the Waters: Environment, Politics, and the Building of the Tennessee-Tombigbee Waterway* (Akron, Ohio: The University of Akron Press, 1993).
4. Reuss, *Shaping Environmental Awareness*, p. 19.
5. Oliver Houck, interview by author, New Orleans, Louisiana, 17 March 1983.
6. Stephen Fox, *John Muir And His Legacy: The American Conservation Movement* (Boston: Little, Brown and Co., 1981), pp. 196-97, 253-62; Samuel P. Hays, *Beauty, Health, and Permanence: Environmental Politics in the United States, 1955-1985* (Cambridge: Cambridge University Press, 1987), p. 70; Robert Gottlieb, *Forcing the Spring: The Transformation of the American Environmental Movement* (Washington, D.C.: Island Press, 1993), pp. 157-58.
7. Thomas R. Dunlap, *DDT: Scientists, Citizens, and Public Policy* (Princeton: Princeton University Press, 1981), pp. 143-54.
8. Houck interview.
9. Ibid.
10. Lieutenant Colonel Leon E. McKinney, Assistant Director of Civil Works for Mississippi Valley, Civil Works Directorate, Office of the Chief of Engineers, Memorandum for Record, 5 November 1971, Atchafalaya Correspondence, 1971 in Suzanne Hawes File. Hawes was head of the environmental quality section, planning division, NOD.
11. Houck interview; Richard Baumbach and William Borah wrote a book about their adventures, *The Second Battle of New Orleans: A History of the Vieux Carré Riverfront Expressway Controversy* (University, Alabama: University of Alabama Press, 1981).
12. Houck interview; Thomas L. Kimball, Executive Director, National Wildlife Federation, to Lieutenant General Frederick J. Clarke, Chief of Engineers, 12 October

1971 (copy), Oliver Houck Files (photocopies of correspondence in Houck's possession), OH HQUSACE [hereinafter cited as Houck Files].

13. Houck interview.

14. Kimball to Clarke, 12 October 1971.

15. Houck memorandum, 19 August 1971, Houck Files.

16. Oliver Houck, "Atchafalaya-Potential Studies," 4 October 1971, Houck Files.

17. Houck to Eichhorn, 15 October 1971, FWS.

18. Kimball to Clarke, 12 October 1971.

19. Houck interview.

20. The Corps' response to NEPA has been examined elsewhere in detail. See Daniel A. Mazmanian and Jeanne Nienaber, *Can Organizations Change: Environmental Protection, Citizen Participation, and the Corps of Engineers* (Washington, D.C.: The Brookings Institution, 1979); Serge Taylor, *Making Bureaucracies Think: The Environmental Impact Statement Strategy of Administrative Reform* (Stanford: Stanford University Press, 1984); Richard N. L. Andrews, *Environmental Policy and Administrative Change: Implementation of the National Environmental Policy* (Lexington, Massachusetts: D. C. Heath and Co., 1976); Lance D. Wood and John R. Hill, Jr., "Wetlands Protection: The Regulatory Role of the U. S. Army Corps of Engineers," *Coastal Zone Management Journal* 4, 4 (1978): 371-407; Steven Weller, "Public Policy as Law in Action: The Implementation of the National Environmental Act of 1969 by the U. S. Army Corps of Engineers" (unpublished Ph.D. dissertation, Cornell University, 1979).

21. *Engineer Memoirs. Interviews with Lieutenant General Frederick J. Clarke*, EP 870-1-5 (Washington, D.C.: Historical Division, Office of the Chief of Engineers, November 1979), p. 200.

22. Clarke's letter to board members, 2 April 1970, as cited in Reuss, *Shaping Environmental Awareness*, p. 1. The Environmental Advisory Board met in New Orleans in early February 1973, and the Corps gave board members a land and air tour of the Atchafalaya Basin. See *ibid.*, p. 27.

23. The term "public meeting" was introduced in EC 1120-2-55, "Investigation, Planning and Development of Water Resources: Public Meetings in Planning," 1 September 1970.

24. Remarks by Clarke before the Short Course on Public Participation in Water Resources Planning, Atlanta, Georgia, 2 February 1971, as cited in EC 1165-2-100, "Water Resources Policies and Authorities: Public Participation in Water Resources Planning," 28 May 1971. Both this circular and the one cited in the preceding note are reprinted in Charles M. Clusen (project director), Thomas M. Clement, Jr., Glenn Lopez, and Pamela T. Mountain, *An Engineering Victory for our Environment: A Citizen's Guide to the U.S. Army Corps of Engineers* (Washington, D.C.: The Institute for the Study of Health and Society, 1972). The document was completed under contract to the Environmental Protection Agency, which distributed it through the Government Printing Office.

25. Houck interview.

26. McKinney, Memorandum for Record, 5 November 1971, Atchafalaya Correspondence, 1971, Hawes Files, NOD; memorandum to the file from National Wildlife Federation staff, subj: Atchafalaya—Meeting with Lt. Gen. F. J. Clarke, Maj. Gen. Andrew Rollins, Col. Richard F. McAdoo, Lt. Col. Leon E. McKinney, 4 November 1971 (copy), National Wildlife Federation Files, OH HQUSACE.

27. McKinney, Memorandum for Record, 5 November 1972, NOD.

28. Houck interview; NWF staff memorandum, 4 November 1971 (copy), OH HQUSACE; Kimball to Clarke, 5 November 1971, Atchafalaya Correspondence, 1971, Hawes Files, NOD.
29. Clarke to Kimball, 6 December 1971, Atchafalaya Correspondence, 1971, Hawes Files, NOD.
30. Clarke to Noble, 6 December 1971, Atchafalaya Correspondence, 1971, Hawes Files, NOD.
31. Noble to Kimball, 22 December 1971, Atchafalaya Correspondence, 1971, Hawes Files, NOD.
32. For more on this, see Lynton K. Caldwell, "A Constitutional Law for the Environment: 20 Years With NEPA Indicates The Need," *Environment* 31, 10 (December 1990): 6-11, 25-28.
33. Fred Chatry, interview by author, New Orleans, 14 March 1983.
34. Ibid.; Houck interview.
35. Mazmanian and Nienaber, *Can Organizations Change*, pp. 145-57.
36. Fact Sheet, prepared by W. B. Dodd, subj: FCMR&T (Flood Control, Mississippi River and Tributaries), Atchafalaya Basin Cooperative EIS, n.d. (c. mid-1972), Atchafalaya Basin Steering Group Correspondence, 1972, NOD.
37. Minutes, Second Meeting of the Atchafalaya Basin Steering Group, 28 April 1972, NOD.
38. Robert Schroeder, NOD, to Copp Collins, U.S. Fish and Wildlife Service, 14 April 1972, FWS; Russell E. Train, Chairman, Council on Environmental Quality (CEQ) to Kenneth E. Belieu, Under Secretary of the Army, 3 November 1972; Memorandum for Record by Captain James P. King, Environmental Officer, NOD, subj: Briefing for Mr. John Bustrud [CEQ], n.d., [the briefing was held on 1 December 1972], Atchafalaya Basin Water and Land Resources Study Correspondence, 1972, NOD.
39. Oliver Houck to Thomas Kimball, note attached to copy of letter, Houck to Lieutenant Colonel William E. Lee, Jr., Acting District Engineer, NOD, Houck Files.
40. Don Schueler, Louisiana Audubon Society representative, interview by author, New Orleans, 14 March 1983; Houck interview.
41. For documentation on these disputes, see "Atchafalaya Basin Study: History, Status, and Coordination Efforts, 17 October 1979, NOD.
42. On preemptive versus meliorative obligations, see David Lewis Feldman, *Water Resources Management: In Search of an Environmental Ethic* (Baltimore: The Johns Hopkins University Press, 1991), pp. 86-87, 93.
43. For more on these points, see Neil S. Grigg, *Water Resources Planning* (New York: McGraw-Hill, Inc., 1985); Philip C. Metzger, "The Need for Institutional Modernization," in *Social and Environmental Objectives in Water Resources Planning and Management*, ed. Warren Viessman, Jr., and Kyle E. Schilling (New York: American Society of Civil Engineers, 1986), pp. 32-33; in the same book, William B. Lord, "An Evolutionary Perspective on Social Values," pp. 1-11; Constance Elizabeth Hunt, with Verne Huser, *Down by the River: The Impact of Federal Water Projects and Policies on Biological Diversity* (Washington, D.C.: Island Press, 1988), pp. 163-64.
44. Atchafalaya Basin Study: History, Status, and Coordination Efforts, 17 October 1979, NOD. See also Barry J. Frankel, "The Atchafalaya Basin: A study of the Corps of Engineers' Response to NEPA" (copy of unpublished manuscript, OH HQUSACE, April 1981), pp. 12-13.
45. Houck to Bruce Montgomery (Arnold and Porter), 19 November 1974; Houck to Colonel E. R. Heiberg III, District Engineer, 26 November 1974; Houck to Thomas

Kimball, 2 December 1974; Houck to Montgomery, 3 December 1974. All in Houck Files; Frankel, "The Atchafalaya Basin," p. 13.

46. Major General E. R. Heiberg III, interview by author, 7 April 1983.

47. Houck interview; transcript of introductory comments at Lafayette meeting, Atchafalaya Basin Floodway, LA, Steering Group Correspondence, 1975, NOD; Lawrence C. Maisel, Counsel to National Wildlife Federation, to Colonel E. R. Heiberg III, 21 February 1975, FWS; Colonel Heiberg, Memorandum for Record, subj: Meeting at Morgan City, 12 April 1975, Atchafalaya Basin, LA, Study, General Correspondence, 1975, NOD; Heiberg to Houck, 9 June 1975 (copy), File 2, Box 3, Benjamin Dysart Papers, OH HQUSACE [hereinafter cited as Dysart Papers]; Frankel, "The Atchafalaya Basin," p. 14.

48. Newman Trowbridge, Jr., to Heiberg, 27 May 1975; Iberville Land Company and St. Martin Land Company to Heiberg, 3 June 1975. Both in Atchafalaya Basin General Correspondence, 1975, NOD; Trowbridge to Colonel Early J. Rush III, District Engineer, 30 October 1975, Atchafalaya Basin General Correspondence with Other Agencies, 1975, NOD. The Iberville Land Company owned about 17,000 acres in the lower basin, and the St. Martin Land Company owned about 33,000 acres.

49. Benjamin C. Dysart, interview by author, 24-25 February 1986; Victor V. Veysey, interview by author, 9 April 1985; Notes, "Atchafalaya Basin Briefing for Mr. Veysey," prepared by Dysart, 12 November 1975, "Atchafalaya Papers-30 October 1975-25 November 1975," File 7, Box 2, Dysart Papers.

50. Veysey interview; Dysart interview; Veysey to Director, Civil Works, 12 December 1975, Office of the Assistant Secretary of the Army for Civil Works Files, Washington, D.C. [hereinafter cited as OASA/CW Files]; Veysey to Director, Civil Works, 23 December 1975. Major General Ernest Graves Files, OH HQUSACE [hereinafter cited as Graves Files].

51. Memorandum for Record, Dr. Benjamin Dysart, Science Advisor to the Assistant Secretary of the Army for Civil Works, subj: 7 January meeting with Graves and others, OASA/CW Files.

52. Graves to Division Engineer, Lower Mississippi Valley Division (Major General Francis Koisch), subj: Lower Atchafalaya Floodway Project, 17 January 1976, OASA/CW Files; Koisch to Graves, subj: Lower Atchafalaya Floodway Project, 18 February 1976, Graves Files. Quotation is from a note attached by Graves to the 18 February letter.

53. Koisch to Veysey, 1 March 1976, Graves Files.

54. Ellison Madden, Project Director, Atchafalaya Basin Land and Water Management Study, U.S. Fish and Wildlife Service, to Colonel Early Rush, District Engineer, 12 March 1976, OASA/CW Files.

55. Graves to Distribution (Civil Works Directorate), 29 March 1976, Graves Files.

56. Graves to Koisch and Graves to Veysey, both 30 April 1976, Graves Files.

57. Veysey to Director, Civil Works, 21 May 1976. This note is attached to the 18 June letter from Graves to President, Mississippi River Commission (Major General Koisch), Graves Files.

58. Paragraph 3, Appendix C, to ER 1105-2-507, "Planning: Preparation and Coordination of Environmental Statements," 15 April 1974, as reprinted in U.S. Congress, Senate, Committee on Public Works, Subcommittee on Water Resources, *Corps of Engineers Oversight*, 93d Cong., 2d sess., Serial No. 93-H45, 4 June 1974, pp. 257-58. This congressional document contains many of the early Corps and CEQ regulations dealing with EIS preparation.

59. Koisch to Civil Works Planning Division, 17 August 1976, Graves Files.

60. Morris to Koisch, 13 September 1976, Atchafalaya Basin General Correspondence with Other Agencies, 1976, NOD.
61. Koisch to Graves, 6 December 1976, Atchafalaya Basin General Correspondence with Other Agencies, 1976, NOD.
62. Minutes, Mississippi River Commission Low Water Inspection Trip, Meeting at Morgan City, 22 October 1976, Atchafalaya Basin General Correspondence with Other Agencies, 1976, NOD.
63. Rush to Koisch, 15 September 1976, Atchafalaya Basin General Correspondence with Other Agencies, 1976, NOD.
64. Ellison Madden, FWS, to Rush, 22 October 1976, Atchafalaya Basin General Correspondence with Other Agencies, 1976, NOD; Thomas Kimball, National Wildlife Federation, to Veysey, 23 November 1976, Graves Files.
65. Graves to Koisch, 3 December 1976, Graves Files.
66. Roy Aguillard, Louisiana Office of Public Works, to Rush, 20 January 1977, Atchafalaya Basin General Correspondence with Other Agencies, 1977, NOD. Pursuant to the approval of a new state constitution in 1974, the old Department of Public Works had become an office within a newly established Department of Transportation and Development or DOTD.
67. Trowbridge to Rush, 15 April 1976, FWS.
68. Governor Edwin Edwards to Congressman Richard A. Tonry, 26 January 1977 (with attached 20 January Aguillard letter), Atchafalaya Basin General Correspondence with Other Agencies, 1977, NOD.
69. Rush to Aguillard, 18 February 1977, Atchafalaya Basin General Correspondence with Other Agencies, 1977, NOD.
70. Houck's description is taken from a 17 September 1975 memorandum to Benjamin Dysart, which Dysart read during his interview.
71. J. C. Day, Enzo Fano, R. R. Lee, Frank Quinn, and W. R. Derrick Sewell, "River Basin Development," in *Geography, Resources, and Environment. Volume II: Themes from the Work of Gilbert F. White*, ed. Robert W. Kates and Ian Burton (Chicago: University of Chicago Press, 1986), II:124; Norman Wengert, "A Critical Review of River Basin as a Focus for Resources Planning, Development, and Management," in *Unified River Basin Management*, ed. Ronald M. North, Leonard B. Dworsky, and David J. Allee (Minneapolis: American Society of Civil Engineers, 1980), pp. 9-27.
72. G. Ray Arnett, President, National Wildlife Federation, to Victor Veysey, 13 July 1976 (copy); Oliver Houck to Charles A. Ford, 20 September 1976; Memorandum, Benjamin C. Dysart III, Scientific Advisor, to Victor Veysey, subj: Kimball Letter on Steering Group, 21 July 1976, all in Folder 1, Box 3, Dysart Papers; Frankel, "The Atchafalaya Basin," p. 18.

Chapter 10

Defending the Turf

1. Lockwood, *Atchafalaya: America's Largest River Basin Swamp*, p. 23; George E. Baker, "Engineers vs. Florida's Green Menace," *The Florida Historical Quarterly* 60, No. 4 (April 1982): 413-14. Water hyacinths were introduced into the United States at the 1884 New Orleans Cotton States Exposition. They clump together and in the growing season double in area every month. The purple flowers last only a few days, but the seeds may remain fertile for seven or more years.

2. *Feasibility Study*, II:A-147-49, A-216; Milburn Calhoun, ed., Susan Cole Dore, asst., *Louisiana Almanac* 1992-93 (Gretna: Pelican Publishing Co., 1992), pp. 148-52.
3. Joey Dykes, New Orleans District, to Jan Holderness, National Geographic Society, 24 May 1979, NOD, copy in OH HQSACE Atchafalaya files.
4. *Feasibility Study*, II:A-161.
5. Cary Kerlin, Field Supervisor, Lafayette, to the editor, *New Iberia Daily Iberian*, 7 December 1978 (citing Corps figures), FWS.
6. *Feasibility Study*, II:A-211, A-219.
7. Ralph W. Tiner, Jr., *Wetlands of the United States: Current Status and Recent Trends* (Washington, D.C.: U.S. Department of the Interior, Fish and Wildlife Service, 1984), pp. vii, 38, 48.
8. Michael Black, "The Unnatural Policies of Natural Resource Agencies: Fishery Policies on the Sacramento River," in *Greening Environmental Policy: The Politics of a Sustainable Future*, ed. Frank Fischer and Michael Black (London: Paul Chapman Publishing, 1995), pp. 53-65; Arthur F. McEvoy, *The Fisherman's Problem: Ecology and Law in the California Fisheries, 1850-1980* (Cambridge: Cambridge University Press, 1986), pp. 100-02; Donald Worster, *The Wealth of Nature: Environmental History and the Ecological Imagination* (New York: Oxford University Press, 1993), pp. 144-45.
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15. Van Beek interview.
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17. Ibid., p. 25.
18. Johannes L. van Beek, William G. Smith, James W. Smith, and Philip Light, *Plan and Concepts for Multi-Use Management of the Atchafalaya Basin*, EPA 600/3-77-062 (Washington, D.C.: Environmental Protection Agency, Office of Research and Development, May 1977), p. 171.
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22. Minutes, ABAMG Meeting, 29 June 1977, Atchafalaya Basin General Correspondence with Other Agencies, File III, 1977, NOD.
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36. Roy K. Wood to Executive Assistant to the Secretary, subj: WATER RESOURCES: Atchafalaya Basin Louisiana-Problems and Possible Solutions, 15 June 1978, FWS.
37. Misso interview.
38. Black to Lynn Greenwalt, 28 July 1978, FWS.
39. Ibid.

40. Sands to Russell Earnest, 29 August 1978 (summarizing 21 August meeting), and record of telephone conversation, Russell Earnest and Robert Misso to Kenneth Black (memo by Black), 21 September 1978, FWS.
41. Memorandum of a telephone conversation, Black with Misso and Earnest, 21 September 1978, FWS.
42. Ibid.
43. U.S. Department of the Interior, Fish and Wildlife Service, *The Atchafalaya: America's Greatest River Swamp. A Proposal to Establish the Atchafalaya Fish, Wildlife, and Multi-Use Area*, presented to the Atchafalaya Basin Agency Management Group for Consideration in the Development of Alternatives, October 1978.
44. Misso to Earnest, subj: Atchafalaya Meeting with Colonel Sands, 19 September 1978, 21 September 1978, FWS.
45. Greenwalt to Associate Director, Environment, FWS (Mike Spear), 22 September 1978, FWS. Emphasis is in the original.
46. Earnest to Greenwalt, 16 October 1978, FWS.
47. Telephone conversation, Soileau to Misso, memorandum by Soileau, 18 October 1978, FWS.
48. Telephone conversation, Misso, Kerlin, and Soileau with Houck, memorandum by Soileau, 23 October 1978, FWS.
49. Telephone conversation, Misso, Steve Gard, and Fred Bagley to Soileau and Kerlin, memorandum by Soileau, 25 October 1978, FWS.
50. Ibid.; Misso interview.
51. Mike Cook, "Interior Dept. Proposes Corps Buy the Basin," *Baton Rouge Morning Advocate*, 27 October 1978; Cook interview.
52. Houck to B. E. M. Skerrett III, chairman, Greater Atchafalaya Basin Council, 7 December 1978, Houck Files.
53. Misso interview.
54. Houck to Greenwalt, 7 November 1978, Houck Files. Emphasis is in the original.
55. Trowbridge to Members and Friends of Louisiana Landowners Association, Inc., 31 January 1979, Houck Files.
56. U.S. Fish and Wildlife Service, Lafayette Field Office, "Saving the Atchafalaya: Status of the Planning Process of the January 1979 Public Meetings," 15 July 1979, FWS.
57. Foster Sanders, interview by author, Baton Rouge, Louisiana, 19 January 1984; Misso interview. The extent of the Fish and Wildlife Service's involvement is documented in many memorandums by FWS personnel who attended STAB meetings in 1979. See FWS Files.
58. Misso interview; Telephone conversation, Dr. Larry Crain, Secretary of Louisiana Department of Culture, Recreation, and Tourism to David Soileau, memorandum by Soileau, 7 February 1979, FWS; "Atchafalaya Purchase is Opposed," *New Orleans States-Item*, 7 March 1979.
59. Robert Misso to Area Manager, Jackson, Mississippi, subj: Atchafalaya Update, 21 February 1979; "Status Report: Proposal to Acquire the Privately-Owned Lands of the Atchafalaya Basin Floodway," no date (c. summer 1979); "Atchafalaya Basin (Water and Land Resources) Study, Louisiana: An Unusual Approach and Priority Commitment to Save a Unique Resource," no date (c. late summer 1981), FWS; Sanders interview.
60. "Atchafalaya Basin (Water and Land Resources) Study, Louisiana: An Unusual Approach and Priority Commitment to Save a Unique Resource," FWS. The oil and gas

agreement was published in the U.S. Army Corps of Engineers, *Feasibility Study, II: Appendix B.*

61. Memorandum for Record by Lieutenant Colonel George F. Boone, subj: Interagency Meeting on the Atchafalaya Basin, 23 October 1979, written on 15 November 1979, FWS.

62. W. Henson Moore to Lynn Greenwalt, Director, U.S. Fish and Wildlife Service, 21 March 1979, FWS.

63. Greenwalt to Associate Director, Environment, 27 April 1979, FWS.

64. Greenwalt to Honorable W. Henson Moore, 21 May 1979, FWS.

65. Telephone conversation, Russell Earnest and David Soileau, memorandum by Soileau, 11 April 1979; Telephone conversation, Roy Wood, Special Assistant to the Secretary, Southeast Region, and David Soileau and Robert Misso, memorandum by Soileau, 13 April 1979, both in FWS.

66. Greenwalt to the Under Secretary, 30 May 1979, FWS.

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68. Ibid. Emphasis is in the original.

69. Memorandum, Atchafalaya Visit by Under Secretary (19 November 1979), author unidentified, FWS; "Remarks of James A. Joseph, Under Secretary, Department of the Interior, before the Lafayette Chamber of Commerce, Lafayette, Louisiana, November 19, 1979," FWS.

70. *Atchafalaya Story: The Part They Forgot To Tell You. An Attempt At Informing Our Citizens Of What Has Happened And What May Happen In The Atchafalaya Basin And Its Surrounding Area*, published by the Louisiana Landowners Association, Inc. and the St. Mary Industrial Group, 1980.

71. van Beek, et al., *Operation of the Old River Control Project, Atchafalaya Basin*, p. 25.

72. See Hébert, *Flood Control Capabilities of the Atchafalaya Basin Floodway*, p. 55.

73. Van Beek, et al., *Operation of the Old River Control Project, Atchafalaya Basin*, p. 28; *Feasibility Study, Main Report and Final Environmental Impact Statement*, I:33.

74. "Atchafalaya Under Scrutiny: Alternatives for Operating Old River Project," *New Orleans Times-Picayune*, 19 January 1979, p. 6.

75. *Feasibility Study*, I:33-34; Sands' quotation is from the *Franklin Post*, 24 August 1979, as cited in Lee Pendergrass, "Stewards of the Waters: The Corps of Engineers New Orleans District, 1977-1988" (unpublished manuscript, New Orleans District, U.S. Army Corps of Engineers, May 1989), p. 173.

76. *Feasibility Study*, II:B-33.

77. The feasibility study addressed both authorized and "preauthorized" elements—those which still required congressional approval, including environmental, real estate, and recreational elements. The general design memorandum dealt only with authorized features, principally flood control. However, pursuant to Assistant Secretary Veysey's guidance in 1976, it included studies of alternate plans to accomplish the project purposes. House and Senate committee resolutions had directed the study of preauthorized features. See *ibid.*, II:A-3 to A-4. For additional explanation, see Chapter 11, pages 281-82.

78. *Feasibility Study*, II:60-64.

79. Cary W. Kerlin, Lafayette Field Supervisor, FWS, to Colonel Sands, 21 September 1979; Gary Hickman, Lafayette Area Manager, FWS, to General Thomas A. Sands, Reporting Officer, Atchafalaya Basin Project, 13 January 1982, both in FWS.

80. Pendergrass, "Stewards of the Waters," p. 172.

81. Suzanne Hawes, interview by author, 5 March 1986.
82. Cary W. Kerlin, Lafayette Field Supervisor, FWS, to Colonel Sands, 21 September 1979; Adlene Harrison, Regional Administrator, EPA, to Colonel Sands, 4 March 1981; Gary Hickman, Lafayette Area Manager, FWS, to General Thomas A. Sands, Reporting Officer, Atchafalaya Basin Project, 13 January 1982, all in FWS.
83. *Feasibility Study*, I:EIS-221.
84. Frances E. Phillips, Acting Regional Administrator, EPA, to Colonel Sands, 4 May 1981, Hawes Files, OH HQUSACE.
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86. *Ibid.*, I:67.
87. Information on the early history of the Avoca Island Levee comes from U.S. Army Corps of Engineers, New Orleans District, "Draft Environmental Statement: Atchafalaya Basin Floodway, Louisiana," 5 vols, February 1976, III:39; *Feasibility Study*, II: C-44.
88. "Probable Adverse Impact of Construction of the Avoca Island Levee Extension," FWS fact sheet, no date, FWS.
89. David W. Fruge, Acting Field Supervisor, Lafayette, to Jerry Dyson, Program Administrator, Office of Public Works, 27 June 1979, FWS.
90. J. Burton Angelle, Secretary, Louisiana Department of Wildlife and Fisheries, to Roy Aguillard, Assistant Secretary, Office of Public Works, 26 July 1979, FWS.
91. Bobby G. O'Barr, Chairman, Gulf of Mexico Fishery Management Council, to Colonel Sands, 20 August 1981, FWS; D. K. Ekberg, Chief, Environmental and Technical Services Division, National Oceanic and Atmospheric Administration, to Colonel Sands, 20 August 1981, FWS.
92. *Feasibility Study*, I:80-81.
93. Cary W. Kerlin, Field Supervisor, Lafayette, to Colonel Sands, District Engineer, 17 December 1980, FWS.
94. According to Cary Kerlin in a letter to Colonel Sands, 5 March 1981, FWS.
95. U.S. Army Corps of Engineers, New Orleans District, "A Feasibility Report/Environmental Impact Statement on the Atchafalaya Basin Floodway System, Louisiana: An Interim Report of the Atchafalaya Basin (Water and Land Resources), Louisiana Study combined with a Phase I General Design Memorandum. Draft Main Report and Environmental Impact Statement," 5 vols.,(New Orleans, June 1981). Volume I describes the tentatively selected plan on pp. 189-202.
96. Bob Marshall, "Landowners had Loudest Voice at Basin Meeting," *New Orleans Times-Picayune*, 19 July 1981.
97. D. K. Ekberg, National Oceanic and Atmospheric Administration, to Colonel Sands, 29 April 1981, FWS.
98. Soileau, Acting Field Supervisor, Lafayette, to Colonel Sands, 3 May 1981, FWS.
99. *Ibid.*
100. U.S. Department of the Interior, Fish and Wildlife Service, Division of Ecological Services, "Atchafalaya Basin Reports: Avoca Island Levee Extension and Water Management & Land Use Controls," (Lafayette: Field Office, May 1981), p. 40. The executive orders were issued in June 1978. EO 11988 dealt with floodplain management, and EO 11990 pertained to wetlands protection.
101. Jesse J. Guidry, Secretary, Department of Wildlife and Fisheries, to Kai Midboe, Office of Intergovernmental Affairs, Office of the Governor, 5 May 1981, FWS. Guidry was the recent appointee of the new Republican governor, David Treen.
102. *Feasibility Study*, I:67; and II:B-74.
103. "Commission Overrules Experts; Supports Levee Project at Morgan City," *Alexandria (Louisiana) Daily Town Talk*, 21 April 1982.

Chapter 11

Dénouement?

1. *Atchafalaya Story*; Brigadier General Thomas Sands, interview by author, 6 April 1983; Misso interview.
2. Treen to Rush, 2 February 1977, Atchafalaya Basin General Correspondence with Other Agencies, File II, 1977, NOD.
3. Wall, ed., *Louisiana: A History*, p. 364.
4. Kai Midboe, interview by author, Baton Rouge, Louisiana, 10 March 1983.
5. Houck interview.
6. Ibid.; Newman Trowbridge, interview by author, 12 March 1983; Newman Trowbridge, telephone interview by author, 13 November 1995; Houck to Trowbridge, 15 March 1979; Trowbridge to Houck, 3 May 1979; memo to the files from Houck, subj: Atchafalaya/Negotiations with Landowners, 14 May 1979. All in Houck Files.
7. Memo to the Files by David Soileau, subj: Meeting Among Messrs. Ollie Houck, Bob Strader, and David M. Soileau at Houck's Office in Washington, D.C., on 6/13/79; Houck to Sands, 15 June 1979; "Response to Comments made in Ollie Houck's 18 July 1979 letter to Mike Spear" by David Soileau (emphasizing differences between Houck's and FWS positions), n.d., all in FWS Files. Adlene Harrison, Regional Administrator, EPA, to Colonel Sands, 5 October 1980, Atchafalaya Basin General Correspondence, October–December 1980, NOD.
8. Among those who took this position was Foster "Foxy" Sanders, Chairman of STAB. Sander's political effectiveness was severely limited once Treen came into office. Sanders had served as finance chairman from East Baton Rouge Parish for Treen's Democratic opponent, former Public Service Commissioner Louis Lambert. See "Meeting of 'Proponents' of Acquisition, November 19, 1979," (no author, but probably David Soileau), FWS.
9. Briefing by Colonel Sands, Office of the Chief of Engineers, 7 November 1980, Atchafalaya Files, OH HQUSACE.
10. Ibid.; Adlene Harrison, EPA, to Sands, 5 October 1980, Atchafalaya Basin General Correspondence, October–December 1980, NOD.
11. "Atchafalaya Basin," fact sheet, [prepared as a briefing paper for Secretary of the Interior James Watt], p. 4, Kai Midboe File, OH HQUSACE; "Treen Announces Basin Real Estate Plan," *Louisiana Landowners* [Louisiana Landowners Association Newsletter], December 1980, pp. 1–2. The proposal is printed in U.S. Army Corps of Engineers, *Feasibility Study*, vol. 2, as Attachment 2 to Appendix B; "Treen Reveals Plan for Atchafalaya Basin Management," *Shreveport-Bossier Times*, 7 November 1980. The major differences that Colonel Sands had with the Treen plan was that Sands limited public access to about 75,000 acres, while the state plan opened up a total of over 100,000 acres. Also, the state's plan called for federal cost-sharing of operations and maintenance; the Corps' did not. Finally, the Treen plan called for federal relief from public liability for private landowners in public access areas. Colonel Sands did not think this necessary since state law already provided relief. See Memorandum for Record by Lieutenant Colonel George Boone, Assistant Director of Civil Works, Environment, subj: Atchafalaya Basin, 9 December 1980, Atchafalaya Basin Meetings File, 1980, OH HQUSACE.
12. Mike Cook, "All Agencies Appear Ready to Adopt Basin Plan," *Baton Rouge State-Times*, 18 November 1980.
13. Trowbridge interview; Mike Cook, "Gov. Treen's Atchafalaya Basin Land Use Plan Both Praised, Rapped," *Baton Rouge Morning Advocate*, 16 November 1980; Mike Cook, "All Agencies Appear Ready to Adopt Basin Plan;" "State of Louisiana: Land Use

Proposal For the Final Atchafalaya Basin Management Plan: A Rationale," n.d., Kai Midboe File, OH HQUSACE.

14. Trowbridge, telephone interview; Trowbridge to Congressman W. J. Tauzin, 13 November 1980 (describing the Houck-Trowbridge negotiations and their discussions with Governor Treen), author's files, OH HQUSACE. Trowbridge met with the governor on 4 November 1980 to express his concerns about not showing favoritism. According to Trowbridge, Houck had telephoned the governor a day earlier.

15. Trowbridge interview.

16. Bob Anderson, "Owners Counter Atchafalaya Plan," *Baton Rouge Morning Advocate*, 18 June 1981; *Feasibility Study*, I:EIS-223. Louisiana Landowners Association, "If You Care for the Atchafalaya Basin You'll Love This Realistic Plan," (paid political advertisement), 7 July 1981, copy of advertisement in Atchafalaya press release files, OH HQUSACE.

17. Trowbridge interview; R. Gene Haggard, Regional Manager, Government Affairs, Southeastern States, Dow Chemical U.S.A., interview by author, 11 March 1983; Misso interview; Trowbridge, telephone interview. Trowbridge also gives credit to Bernie Pensonat, who managed the Baton Rouge office of Senator J. Bennett Johnston, for bringing Dow representatives and the landowners together.

18. Midboe interview; letter from Midboe to the author, 8 November 1995, author's files, OH HQUSACE.

19. Memorandum for Record by Oscar Rowe, Chief, Reports and Communications Branch, New Orleans District, subj: Telephone Call [to Kai Midboe] on 30 November 1981, Concerning Governor's New Real Estate Proposal, 30 November 1981, Atchafalaya Basin Correspondence, July-December 1981, NOD; Memorandum to File by Oscar Rowe, subj: Meeting of L.L.A. with Conservationists and Environmentalists Concerning Atchafalaya Basin Real Estate Plan, 6 October 81, 8 October 1981, Atchafalaya Basin Correspondence, July-December 1981, NOD.

20. Trowbridge interview; Haggard interview; Memorandum for Record by Oscar Rowe, subj: Telephone Call [to Kai Midboe]; Trowbridge interview; "Atchafalaya Basin," fact sheet.

21. Quotations are from Bill McMahon, "Atchafalaya Plan Approved," *Baton Rouge Morning Advocate*, 20 November 1981; Joan McKinney, "Watt Endorses Atchafalaya Plan," *Baton Rouge State-Times*, 25 November 1981; A summary of the Governor's Press Conference is printed in *Feasibility Study*, vol. 2, as Attachment 3 to Appendix B.

22. *Feasibility Study*, I:91-94; information on the 1964 real estate study comes from a comprehensive briefing on the Atchafalaya Basin Floodway, 19 August 1982, which was evidently prepared for multiple uses and audiences. OH HQUSACE.

23. Hays, *Conservation and the Gospel of Efficiency*, p. 2.

24. Caldwell, "A Constitutional Law for the Environment," p. 26.

25. For more on the concept of adaptive management, see Kai N. Lee, *Compass and Gyroscope: Integrating Science and Politics for the Environment* (Washington, D.C.: Island Press, 1993), pp. 9-10.

26. Robert V. Bartlett, "The Budgetary Process and Environmental Policy," in *Environmental Policy in the 1980s: Reagan's New Agenda*, ed. Norman J. Vig and Michael E. Kraft (Washington, D.C.: CQ Press, 1984), p. 121.

27. *Ibid.*, p. 123.

28. Quoted in George Brown Tindall, *America: A Narrative History*, 2d edition, 2 vols. (New York: W. W. Norton, 1988), II, 1449-50. On 14 July 1981, the National Wildlife Federation sent a letter to President Reagan calling for the removal of Secretary Watt.

29. Martin Reuss (interviewer), *Water Resources People and Issues: An Interview with William R. Gianelli* (Fort Belvoir, Virginia: Office of the Chief of Engineers, 1985), p. 1.
30. Memorandum to Cary W. Kerlin from David Soileau, subj: Meetings held at NOD on 2/29/80 to discuss Atchafalaya EIS preparation, EPA Wetland Determinations in Atchafalaya Basin Floodway, and the Proposed Ventech Refinery Site in the Floodway, 4 March 1980, FWS.
31. Michael Spear (Associate Director, Environment) to the Regional Director, Atlanta (Kenneth Black), subj: Atchafalaya Display and Literature, 17 March 1980, FWS.
32. Soileau to Sands, 9 June 1980; Memorandum to Area Manager, Jackson, Mississippi, from Robert Misso, subj: Atchafalaya—Recent Developments, 29 July 1980; Memorandum to Area Manager, Jackson, Mississippi, from Robert Misso, subj: Atchafalaya—6 October 1980, Real Estate Meeting; Soileau to District Engineer, New Orleans, 5 June 1981, all in FWS.
33. Gianelli to Arnett, 6 July 1981, Atchafalaya Basin Files, OH HQUSACE [hereinafter cited as Atchafalaya Basin Files].
34. "Cooperative Relationship" quoted in Joan McKinney, "Treen Told No Federal Start-Up Money for Basin Plan," *Baton Rouge Morning Advocate*, 12 January 1982, p. 11-A; On Treen's discouragement, see the record of a telephone call that Oscar Rowe, Jr., of New Orleans District placed to Kai Midboe, subj: Update of State's Current Position Regarding Atchafalaya Basin Study, 26 January 1982, Atchafalaya Basin General Correspondence, January 1982 thru June 1982 File, NOD; On innovative financing, see memorandum for the Director of Civil Works from Gianelli, subj: Meeting with Secretary Watt, Governor Treen, 12 January 1982, Atchafalaya Basin General Correspondence, January 1982-June 1982 File, NOD; Also, "Treen Receives No Commitment for Atchafalaya Money," *Franklin Post*, 5 February 1982. The book by C. C. Lockwood was *Atchafalaya: America's Largest River Basin Swamp*.
35. Louisiana Congressional Delegation (Senators Long and Johnston and Representatives Breaux, Long, Boggs, Moore, Livingston, Huckaby, Tauzin, and Roemer) to the President, 21 April 1982, FWS.
36. Reuss, *Gianelli*, p. 43. For Gianelli's thoughts on Avoca Island, see pp. 44-45.
37. "Summary of the April 19 and 20, 1982, meeting of the Mississippi River Commission (MRC)," by David M. Soileau and Gerald Bodin, FWS; "Longer Levee Below Morgan City Backed," *Baton Rouge Morning Advocate*, 21 April 1982; Mike Cook, "Controversial Levee May Bog Atchafalaya Plan," *Baton Rouge State-Times*, 15 April 1982; Steve Shirley, "Public Responsible for Avoca Decision," *Morgan City Daily Review*, 23 April 1982. For pro and con correspondence to the Corps regarding the Avoca Island Levee extension, see Atchafalaya Basin General Correspondence, January 1982 thru June 1982 File, NOD.
38. Information on the MRC commissioners supplied by the Public Affairs Office, Mississippi River Commission.
39. "Proceedings of the Mississippi River Commission. Minutes of the 316th sess., 19-20 April 1982," NOD; Soileau and Bodin, "Summary of the April 19 and 20, 1982, meeting of the Mississippi River Commission (MRC)." Soileau and Bodin attended the meeting and their report is more comprehensive than the official proceedings.
40. "Proceedings of the Mississippi River Commission, 19-20 April 1982; Soileau and Bodin, "Summary of the April 19 and 20, 1982, meeting."
41. "Campaign Will Attack Avoca Island Project," *New Iberia Daily Iberian*, 8 May 1982; "Opposition Urged on Levee Extension," *Baton Rouge Morning Advocate*, 8 May 1982.

42. Memo to the files by David Soileau, subj: Senior Field Biologist Attendance at a Louisiana Senate Committee on Natural Resources Hearing on 17 June 1982, of Senator Leonard Chabert's Resolution requesting that the Avoca Island Levee Extension be held in abeyance until Hydrological and Biological Studies are completed, 23 June 1982, FWS. The State House passed its resolution on 4 June, and the Senate unanimously passed the identical version on 23 June.

43. Memorandum by David Soileau, subj: Trip to Washington, D.C., to meet with General Heiberg and Mr. William Gianelli on 6/7/82, at the request of Louisiana State Representative Murray Hebert, n.d. (c. 10 June 1982), FWS.

44. "Avoca Island Levee Extension Delayed by Corps," *Morgan City Daily Review*, 3 August 1982.

45. Roy Sessums, interview by author, 16 March 1983.

46. Memorandum by Gerald Bodin and David Soileau, subj: 29 and 30 September 1982, meeting to discuss study needs in the backwater area east of Morgan City, 6 December 1982, FWS.

47. Bratton to the Secretary of the Army, subj: Atchafalaya Basin Floodway System, Proposed Report, Atchafalaya Basin Files.

48. David W. Fruge, Acting Field Supervisor, FWS, to the District Engineer, New Orleans, 3 August 1982; Memorandum for Record, by Oscar Rowe, Jr., subj: Meeting of LMVD/NOD Planning Division Personnel on 18 August 1982 Concerning Atchafalaya Basin Remaining Studies, 19 August 1982, both in Atchafalaya Basin Correspondence, July-December 1982 File, NOD; Memorandum by Bodin and Soileau, subj: 29 and 30 September 1982, meeting to discuss study needs in the backwater area east of Morgan City, 6 December 1982, FWS.

49. David W. Fruge to the District Engineer, New Orleans, 22 October 1982; Colonel Robert Lee to Fruge, 1 December 1982, both in Atchafalaya Basin Correspondence, July-December 1982 File, NOD.

50. John A. Folk-Williams, Susan C. Fry, and Lucy Hilgendorf, *Western Water Flows to the Cities*, vol. 3 of *Water in the West* (Santa Fe, New Mexico, and Covelo, California: Western Network and Island Press, copublishers, 1985), pp. 89-92.

51. Two notable examples of public-private cooperation in the Pacific Northwest: In 1990, Indian tribes in Washington signed the Chelan Agreement with state officials to develop water policies for that state. A similar arrangement occurred on the national level. Indian tribes are working closely with the Corps, the Bureau of Reclamation, and the Bonneville Power Administration to develop an EIS for the operations of the Columbia-Snake River system.

52. For information on the relevant legislation, formation, and conclusions of the Garrison Diversion Unit Commission, see Department of the Interior, Garrison Diversion Unit Commission, *Final Report*, 20 December 1984; David Treen, telephone interview by author, 26 October 1995.

53. Lee to Fruge, 1 December 1982, Atchafalaya Basin Correspondence, July-December 1982, NOD.

54. Disposition Form (DF), Cletis Wagahoff to Chief, Engineering Division, subj: Backwater Flooding East of Morgan City, Atchafalaya Basin, LA, 17 December 1982, Atchafalaya Basin Correspondence, July-December 1982 File, NOD.

55. R.H. Schroeder, Jr., Chief, Planning Division, to Commander, Lower Mississippi Valley Division, 13 December 1991; and James R. Hanchey, Director of Planning, Lower Mississippi Valley Division, to Commander, New Orleans District, 19 December 1991, Atchafalaya Basin Files.

56. These comments are based on numerous conversations with Corps employees in the New Orleans District and elsewhere. Robert Campos, Senior Project Manager, NOD, provided special insight and assistance.

57. B. E. M. Skerrett III and Odon L. Bacque, Jr., to the President, 20 December 1982, Atchafalaya Basin Correspondence, July-December 1982 File, NOD.

58. Bratton to the Secretary of the Army, subj: Atchafalaya Basin Floodway System, 28 February 1983; Bratton to the President, Mississippi River Commission, subj: Atchafalaya Basin Floodway System, Louisiana, 28 February 1983, both in Atchafalaya Basin Files.

59. Memorandum for the Assistant Secretary of the Army (Civil Works), from Major General E. R. Heiberg III, Director of Civil Works, subj: Atchafalaya Basin System, Louisiana, Study—INFORMATION MEMORANDUM, 9 March 1982, Atchafalaya Basin General Correspondence, January 1982 thru June 1982 File, NOD.

60. Memorandum for the Director of Civil Works, from Gianelli, subj: Atchafalaya Basin Floodway System, 14 December 1983; Memorandum for the Assistant Secretary of the Army (Civil Works), subj: Atchafalaya Basin Floodway System—INFORMATION MEMORANDUM, 13 February 1984, both in the Atchafalaya Basin Files. Secretary Gianelli requested that his staff to scrutinize the Corps' final report. As a result, in December 1983, he sent the Corps a long list of questions. The Director of Civil Works responded the following February with a 50-page document.

61. Bratton to Read, 17 April 1984, Atchafalaya Basin Files.

62. Public Law 98-548, *An Act to Extend the Wetlands Loan Act*, 26 October 1984, Title 3, 98 Stat. 2777; "Atchafalaya Basin Floodway System, Louisiana Project," memorandum prepared by New Orleans District and sent to the author on 15 November 1994; "Atchafalaya National Wildlife Refuge," map prepared by the U.S. Fish and Wildlife Service, 20 March 1985, all in the Atchafalaya Basin Files. Congress had made available to the FWS \$10 million for the purchase of land in the Atchafalaya Basin in the *Second Supplemental Appropriation Act of 1984*, Public Law 98-1396, which was signed on 22 August 1984, two months before the refuge was authorized. Additional information on the national wildlife refuge provided by James Harris, U.S. FWS, Slidell, Louisiana, Office. Money for the Sherburne Wildlife Refuge came from oil and gas revenues provided by the Rockefeller Foundation donation. In 1919, the Rockefeller Foundation donated to the state a tract of coastal land, 26.5 miles long, containing about 84,000 acres. In accordance with the stipulation of the original donation and subsequent agreements (the U.S. FWS has replaced the Rockefeller Foundation in the negotiations), revenue from the land's oil and gas operations has provided Louisiana with funds for public health and education and, more recently, for wildlife refuges. See Midboe interview. See also Amanda Sagrera Hanks, *Louisiana Paradise: The Chênières and Wetlands of Southwest Louisiana* (Lafayette, Louisiana: The Center for Louisiana Studies, University of Southwestern Louisiana, 1988), p. 37.

63. For more on the passage of what eventually became the *Water Resources Development Act of 1986*, see Martin Reuss, *Reshaping National Water Politics: The Emergence of the Water Resources Development Act of 1986*, IWR Policy Study 91-PS-1 (Alexandria, Virginia: Institute for Water Resources, U.S. Army Corps of Engineers, 1991).

64. On passage of this Supplemental Appropriations Act, see *ibid.*, pp. 156-72.

65. Dawson to James C. Miller III, Director, OMB, n.d. (c. January 1986), Atchafalaya Basin Files. For a complete summary of the administration's position on the Atchafalaya Basin project, see enclosure 1 to Dawson to James C. Miller III, Director, Office of Management and Budget, 1 November 1985 (copy), in "Flood Control, Mississippi River and Tributaries, Atchafalaya Basin Floodway System, Louisiana. Real Estate Design Memorandum No. 1 (2d Revision), Acquisition Division Files, Real Estate Directorate, HQUSACE.

66. Major General H. J. Hatch to the Commander, U.S. Army Engineer Division, Lower Mississippi Valley, 12 February 1985, NOD.

67. Disposition Form, Bory Steinberg, Chief, Policy, Review and Initiatives Division, to division chiefs, policy and programs divisions, subj: Atchafalaya Basin—INFORMATION MEMORANDUM (with enclosed draft memorandum from Major General H. J. Hatch, Director of Civil Works, to the Assistant Secretary of the Army (Civil Works), 19 February 1986; Disposition Form, Don Cluff, Chief, Programs Division, to Steinberg, subj: Review of Draft Memorandum to ASA(CW) Regarding Cost Sharing on Atchafalaya Basin Plan, subj: 13 March 1986, both in Atchafalaya Basin Files; Michael S. Rolland, Chief, Legal Support, Real Estate Division, NOD, “Legal Memorandum: Atchafalaya Basin Floodway System Project,” 15 October 1992, File 405-10f (1993), Acquisition Division Files, Real Estate Directorate, HQUSACE.

68. Major General Thomas Sands, Division Engineer, to J. Burton Angelle, Secretary, Department of Wildlife and Fisheries, 20 October 1986, Atchafalaya Basin Files.

69. Marie Burge, New Orleans District, Real Estate Division, telephone interview by author, 30 November 1995.

70. Memorandum, “Atchafalaya Basin Floodway System, Louisiana Project,” 1994, NOD.

71. 101 Stat. 1329-110; Oliver Houck to Secretary Dawson, 3 December 1986, with copies to the Louisiana congressional delegation and to Bert Angelle of the Louisiana Department of Wildlife and Fisheries, FWS.

72. Memorandum, “Atchafalaya Basin Floodway System, Louisiana Project,” 1994, NOD; Marie Burge, New Orleans District, Real Estate Division, telephone interview by author, 27 February 1995.

73. On outside criticism of the REDM, see Executive Summary, “Atchafalaya Basin Floodway System, Louisiana,” 20 July 1993 (no author named). The original report is in the Acquisition Division Files, Real Estate Directorate, HQUSACE. A copy is in Atchafalaya Basin Files.

74. Governor Buddy Roemer to Lieutenant General Henry J. Hatch, Chief of Engineers, 23 September 1988 (copy); Roemer to Colonel Richard V. Gorski, District Engineer, NOD, 8 April 1991 (copy), both in Atchafalaya Basin Files; Memorandum, Thad J. Brown, Chief Real Estate Division, NOD, to Lucille Latta, Director of Real Estate, Lower Mississippi Valley Division, 19 October 1992, subj: Atchafalaya Basin Floodway System, Louisiana, Real Estate Design Memorandum No. 12 (Revised)—Supplement 1, File 405-10f (1993), Acquisition Division, Real Estate Directorate, HQUSACE.

75. Colonel Michael Diffley, telephone interview by author, 3 March 1995; “Executive Summary, “Atchafalaya Basin Floodway System, Louisiana,” 20 July 1993 (copy) OH HQUSACE; Brown to Latta, 19 October 1992, subj: Atchafalaya Basin Floodway System, Louisiana, Real Estate Design Memorandum No. 12 (Revised)—Supplement 1, Acquisition Division Files, Real Estate Directorate, HQUSACE; Developmental Control and Environmental Protection Easement, included with supplemental REDM, File 405-10f (1993), Acquisition Division, Real Estate Directorate, HQUSACE.

76. Michael S. Rolland, Chief, Legal Support, Real Estate Division, NOD, “Legal Memorandum: Atchafalaya Basin Floodway System Project,” 15 October 1992, File 405-10f (1993), Acquisition Division, Real Estate Directorate, HQUSACE.

77. “Executive Summary, “Atchafalaya Basin Floodway System, Louisiana,” 20 July 1993 (copy), Atchafalaya Basin Files; Rolland, “Legal Memorandum: Atchafalaya Basin Floodway System Project,” 15 October 1992, File 405-10f (1993), Acquisition Division, Real Estate Directorate, HQUSACE.

78. Memorandum, Charles J. Flachbarth, Senior Counsel for General Law, to Acquisition Division, Directorate of Real Estate, 23 June 1993, subject: Atchafalaya

Basin Floodway System, Louisiana, Real Estate Design Memorandum No 1 (Revised)—Supplement No. 1 (copy), Atchafalaya Basin Files. Flachbarth sent another memorandum to the Acquisition Branch the same day, same subject, in which he elaborated his views somewhat. This memorandum is also in the Atchafalaya Basin Files.

79. Memorandum, "Atchafalaya Basin Floodway System, Louisiana Project," 1994, NOD.

80. Diffley interview. Oliver Houck has also testified to Colonel Diffley's influence in a conversation with me in his office in New Orleans, 27 May 1994. I supplement the impressions of these two men with my own observations of changes in the New Orleans District over the last fifteen years.

81. Memorandum, "Atchafalaya Basin Floodway System, Louisiana Project," 1994, NOD.

82. Ibid.; *Annual Report of the Assistant Secretary of the Army, Civil Works* (formerly, the ARCE), 1993, II:41–5; U.S. Army Corps of Engineers, Lower Mississippi Valley Division, *Water Resources Development in Louisiana, 1987* (n.d., n.p.), pp. 43–44; New Orleans District budget estimates (c. mid-1994) supplied by Robert Campos. When WRDA-86 directed the Corps to implement "the project for flood control Atchafalaya Basin Floodway System, Louisiana: Report of the Chief of Engineers, dated February 28, 1983, at a total cost of \$250,000,000," the funds thus authorized covered only the costs of the environmental, recreational, and public access features (including real estate). The money was not to be used to construct the modified flood control features in the feasibility report that had been authorized earlier. Thus, today the Corps identifies the "Atchafalaya Basin Floodway System" project as in fact those elements that do *not* include the flood control features, while something simply called the "Atchafalaya Basin, LA" project covers the flood control features but nothing else. When the two projects are combined, the total cost then approaches \$2 billion.

83. G. Edward Dickey, Chief, Planning Division, Civil Works, HQUSACE, to Commander, Lower Mississippi Valley Division, subj: Mississippi River and Tributaries, Atchafalaya Basin, Reevaluation Study—Action Plan, 19 July 1995, HQUSACE; G. Paul Kemp, et al., "Development of a Long-Term Water and Sediment Distribution Plan for the Lower Atchafalaya Basin to Minimize Flooding to Local Communities and to Determine the Impacts of the Present Wax Lake Outlet Weir" (submitted to Mr. Tim Matte, Mayor, City of Morgan City, Louisiana, and Mr. Emmet Hardaway, Mayor, City of Berwick, Louisiana, 25 August 1995), executive summary, pp. 19–20, and Appendix A excerpt from the Corps of Engineers Environmental Assessment, 19 July 1995.

84. Kemp, et al., "Development of a Long-Term Water and Sediment Distribution Plan," pp. 6–7.

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Index

- "a-b-c requirements," 187
ABAMG. *See* Atchafalaya Basin Agency Management Group
Abbot, Henry L., 50–52
Acadians, 8, 19, 21–22. *See also* Cajuns
Access issues. *See* Public access
Act No. 97, 61
Aerial surveys, 178, 213
AFL-CIO, 271, 307
Agricultural land, estimated value of, 167–168
Aguillard, Roy, 288
Alabama Bayou, 153
Alexandria Town Talk, 307–308
Alluvial ridges, 9
American Engineering Council, 129–130
American Red Cross, 103, 110
American Society of Civil Engineers, 87, 88
AMG. *See* Agency management group
Andrus, Cecil, 309
Angel, Sam E., 336
Angelle, J. Burton, 318
Annual Report of the Chief of Engineers, 152, 157
Aquatic ecosystem hydrographs, 298
The Archimedes, 29
Arkansas River, 59, 186–187
Army Corps of Engineers. *See* Corps of Engineers
Army General Counsel, 257
Arnett, G. Ray, 334
Arnold and Porter, 285
Arpent system, 20
Artificial outlets. *See* Outlets
Assessment values, 183
The Atchafalaya: America's Greatest River Swamp, 334
Atchafalaya Basin in 1883, 74
aerial survey of, 178
age of, 9
arpent system, 20
beginning of government involvement, 4–5
borders of, 9
clearing the river raft, state aid for, 26–36
commerce and transportation, 67–69
cost estimates for project, 343
dredging, 147–157
early settlers, 19–25
effect of the Civil War, 52–56
flood control appropriations, 95–96
floodway system, 2, 5
Governor's Commission, 267–268, 270–272, 276
impact of environmental era, 12
interregnum period, 49–69
location of, 3
national recreation area plan, 267–268
natural resources, 8, 11
parts of, 6
politics of engineering plans, 137–147
rights-of-way, 157–167
river transportation, 23–25
size of, 5
transportation routes of 1863, 27
Atchafalaya Basin Agency Management Group, 284, 288, 289, 291–293, 295, 299, 303, 308, 317, 323–326, 328, 339–340, 357
Atchafalaya Basin Division (Louisiana), 271
Atchafalaya Basin Levee District (Louisiana), 61, 87
Atchafalaya Basin Protection Association, 91, 107, 123–124

- Atchafalaya Basin Water and Land Resources Study, 270, 284
- Atchafalaya Bay Ship Channel Company, 68
- Atchafalaya Fish, Wildlife and Multi-Use Area, 303
- Atchafalaya Floodway, 111–112, 132, 144, 169
- Atchafalaya National Safety Valve, 99
- Atchafalaya National Wildlife Refuge, 344, 347–349
- Atchafalaya–Old River route, 236–238
- Atchafalaya Reservoir, 107–108
- Atchafalaya River
- clearing the raft, 209
 - diversion of Mississippi River waters, 215
 - enlargement of, 210
 - Feringa's study of, 218
 - improvement of navigation channel, 235–236
 - junction with Old River, 72
 - reduction of flow opposition, 263
- Atchafalaya Story: The Part They Forgot To Tell You*, 310
- Attakapas Mail Transportation Company, 67
- Attakapas region, 19
- Attakapas Steam Boat Company, 24
- Audubon Society, 283, 329
- Auxiliary structure, Old River, 245–247
- Avoca Island Levee, 315, 317–321, 335–339, 341
- Backwater areas, 211
- Backwater flooding, 214, 315
- Bacque, Odon, 341
- Baehr, Jerome C., 219
- Bank revetment, 66, 81, 108, 111
- Banks, Nathaniel P., 54
- Barataria and Lafourche Canal Company, 24–25
- Barges, 7, 236, 242
- Baton Rouge Morning Advocate*, 304
- Batteaux plats, 23
- Baumbach, Richard, 276
- Bayley, Fred, 247
- Bayou Courtaleau, 153
- Bayou Lafourche, 34, 51
- Bayou Plaquemine, 34
- Bayou Teche, 34, 51–52
- Bayous
- clearing of, 34
 - damming, 53
 - flooding, 51
- Beach Erosion Board (U.S.), 220
- Beacham, Al, 259–260
- Bed-load formula, 220–227
- Behrhorst, Vernon, 259
- Benefit-cost ratio, 338–339
- BERH. *See* Board of Engineers for Rivers and Harbors (U.S.)
- Billbo, Theodore G., 192–193
- Birds, associated with Atchafalaya Basin, 6
- Birds Point–New Madrid Floodway, 127, 190
- Black, Kenneth, 299, 302–303
- Black River, 95–96
- Board of Engineers for Rivers and Harbors (U.S.), 90, 92, 100, 147
- Board of Levee Commissioners (Louisiana), 56, 57, 58
- Board of Public Works (Louisiana), 45, 58
- Board of State Engineers (Louisiana), 59–61
- criticism of Corps of Engineers, 146
- estimated value of agricultural land, 167
- floodways concern, 124
- formation of, 58
- Old River closure issue, 91, 95
- reservoir committee report, 142
- support for levees, 153
- Board of Swamp Land Commissioners (Louisiana), 45–46
- Boat launching ramps, 264
- Boeuf Floodway
- landowner concerns, 130–132
 - litigation, 171
 - objection to fuse plug levee, 126
 - proposal to substitute Eudora Floodway for, 178–179
 - recommendation for government purchase of land, 169
 - reservoir system and, 144, 146
 - supporters of, 173
- Boggs, Hale, 235

- Bondurant, Donald C., 219, 221, 222, 228–229
Bonnet Carré Spillway, 127
BOR. *See* Bureau of Outdoor Recreation
Borah, William, 276
Bordelonville, Louisiana, 104
Borings, 177
Bosch, Charles W., 251, 267, 276–277
Boulder Dam Compact, 174
Bowen, Thomas J., 259–260, 262–263
Bowman, David, 177
Brackenridge, Henry M., 17
Brashear City, Louisiana
 transportation to, 52–53
 Union positions during Civil War, 54
Bratton, Joseph, 338–339, 341–343
Briggs, Frank P., 257
Brooks, Overton, 235
Broussard, Edwin S., 165
Broussard, Robert, 93–94
Brown, Hugh C., 327
Brown, Lytle, 137–139, 144–145, 148, 159, 162–164, 166, 169–170, 178
Buffalo Cove, 350–351
Bureau of Commercial Fisheries (U.S.), 254
Bureau of Outdoor Recreation (U.S.), 266, 268, 270
Bureau of Reclamation (U.S.), 98, 340
Bureau of Sports Fisheries and Wildlife (U.S.), 254, 260
Bureau of the Budget (U.S.), 169, 258
Cain, Louis, 259–260
Cajuns, 8, 12
Caldwell, Lynton K., 278, 332
Calhoun, John C., 41
Califano, Joseph, Jr., 257
Campsite areas, 326
Canals
 connecting bayous, 25
 cost of, 100
 intracoastal, 90
Land Office Commissioner's recommendation, 38
Carter, Jimmy, 320–321
Catchings, T. C., 84–85
CCC. *See* Civilian Conservation Corps
Center channel project, 285, 287, 301
CEQ. *See* Council on Environmental Quality
Certificates of indebtedness, 56, 162
Channels
 center channel project, 285, 287, 301
 channel maturity, 154
 channel training, 313
 construction in Atchafalaya Bay, 68–69
 from dredging, 151, 236
Chase, William H., 28–29
Chatry, Fred, 281
Chief of Engineers (U.S. Army), 193, 224, 256, 301
Bratton, Joseph, 338
Brown, Lytle, 137–138
Clarke, Frederick J., 277
Heiberg, E. R., III, 330
Humphreys, Andrew A., 50
Jadwin, Edgar, 109, 113
Markham, Edward M., 177
Morris, John, 287
Pick, Lewis A., 217
Schley, Julian L., 175
Sturgis, Samuel D., Jr., 230
Chitimacha Indians, 19
Civil War
 Atchafalaya Basin and, 10, 11, 52–56
 conditions on Old River at end of, 73
 reconstruction, 49
Civilian Conservation Corps (U.S.), 168–169
Clark, William P., 340
Clarke, Jeanne Nienaber, 254
Clarke, Frederick J., 277–282
Clean Air Act, 309
Clean Water Act, 291, 324
Clearcutting, 348
Clement, Roland, 278
Coast and Geodetic Survey (U.S.), 64
Coastal Environments, Inc., 296
Commercial Fisheries Bureau. *See* Bureau of Commercial Fisheries
Commercial fishing industry, 251
Commission of Engineers (Louisiana), 58
Commission of Persons on the Levees of Louisiana, 58–59
Commissioner system, for swamplands (Louisiana), 44–46

- Committee on Flood Control (American Engineering Council), 129–130
Committee on Roads and Canals (U.S. House), 62
Compensation. *See* Flowage easements; Just compensation
Comprehensive easements, 325, 328, 330
Comptroller General of the United States, 166
Computer modeling, 245
Comstock, Cyrus B., 81, 84
Conchas Dam, 215
Condemnation proceedings, 184, 194, 303–304, 324–325
Congress. *See* Federal government
Conservation. *See* Fisheries and wildlife conservation
Conservation programs, 168–169
Conservationists, 272
Continuing Appropriation Act of 1988, 347
Control Structure, Old River
building of, 238–242
controversy over, 222
criteria for, 226
estimated cost of, 216
options for, 221–222
plan for construction, 216
plans to operate, 312
post-construction problems, 242–247
proposed site for, 229
Cook, Mike, 267, 304
Coolidge, Calvin, 119–120, 122, 127–128, 158
Corps of Engineers (U.S. Army)
agreement with National Wildlife Federation, 275–282, 357
Beach Erosion Board, 220
channel training, 313
comprehensive review of the Mississippi River and Tributaries Project, 258
coordination with Mississippi River Commission, 66
criticism of, 104–105, 139–147
development of, 10
dredging, 147–157
engineering proposals for the 1960s, 249
environmental activists and, 273–289
feasibility report, 319
fee simple options, 188–192
final report on outlets, 99–100
importance of political neutrality, 174
investment in Atchafalaya Basin, 351–352
opposition to government purchase of flowage easements, 168
options for controlling Old River, 219–230
recreation plans, 264–266
relationship with FWS, 254–264
report on navigation channel for Atchafalaya River, 236
Reservoir Board, 141
schematic map of Mississippi River and Tributaries Project, 208
Special Flood Control Board, 130
Spillway Board, 111
“Topographical Corps,” 39
water management study, 270, 272
writing the environmental impact statement, 282–289
Corrective dredging, 156
Cost-sharing, 94, 118, 186, 335, 344–346
Cotton, 55
Council on Environmental Quality (U.S.), 282–283, 287
The Courier-Journal, 130
Cowdon, John, 85
Crawfish, 20–21
Crevasses
description, 36
from floods of 1882, 66
from floods of 1890, 84
from floods of 1927, 103–105
from floods of 1932, 161, 163
Morganza Crevasse, 85
Crop control program, 213
Culverts, 45
Cummings, Homer S., 163–165
Curry, Robert W., 24
Cutoffs. *See also* Outlets
Markham’s plan, 177–181
Cypress Creek Gap, 97, 105, 132
Cypress harvesting, 67
Cypress–tupelo swamps, 325–326

- Dabney, T. G., 88
Dams. *See* Sill dams
Darby, William, 17–18, 26
Darling, H. Velpeau, 219, 225
Davis, Calvin, 238
Davis, Dwight, 110
Davis, Ellsworth I., 258, 260
Dawkins, Benjamin C., 130–132
Dawson, Robert K., 344–345
Dean, John Paul, 178
Dear, Cleveland, 166, 178
DEIS. *See* Draft environmental impact statement
Department of Agriculture (U.S.)
crop control program, 213
estimated value of agricultural land, 168
Department of Culture, Recreation and Tourism (Louisiana), 324
Department of the Interior (U.S.), 255, 266, 268, 282–284, 288, 309
Department of Natural Resources (Louisiana), 324
Department of Public Works (Louisiana), 61, 271–272
Department of Transportation and Development (Louisiana), 317
Department of Wildlife and Fisheries (Louisiana), 324
Depression era, 133–134, 137–138
Dern, George H., 162–166, 169–170
Design project flood, 13
Design with Nature, 295
Detention reservoirs, 108
Developmental easements, 325, 330
Dewatering, 297–299
Diffley, Michael, 349–350
Dikes, 66, 260–262
Distributary channels, 250
District commissioners, for swamplands, 44–46
Districts, for levees, 60–61, 64, 65, 87, 88, 159, 162
Diversion channels, 39, 226–227
“Doctrine of Contraction,” 87. *See also* permeable dikes
Dondero, George A., 235
DOTD. *See* Department of Transportation and Development
Dow Chemical Company, 327–329
Draft environmental impact statement, 283, 284–288, 299
Dragline machines, 152
Drainage ditches, 20
Dredge boats, 57, 73, 83. *See also* Hydraulic dredges
Dredging
changes in basin’s terrain, 152
channel cuts, 207
corrective dredging, 156
expansion of program, 153
FWS report, 260–262
lack of funding for, 263
Old River, 210
politics of, 157
problems of experimental dredging, 151
sedimentation, 154–156
special resolution, 148
spoil areas, 251
support for, 147–151
Drilling rig, 177
Driver, W. J., 133
Dunbar, George T., 30, 32
Duplessis, Francois, Jr., 24
Duralde, Martin, Jr., 24
Dykes, Joseph, 305
Dysart, Benjamin C., 286
Eads, James B., 63, 66, 75–76
Earnest, Russell, 302, 303–304
Easements. *See* Flowage easements
East Atchafalaya Basin Protection Levee, 3, 180, 207
Edwards, Edwin, 270–271, 288, 300, 306, 309
Eichhorn, Richard, 277
Einstein, Hans A., 220–229, 238
EIS. *See* Environmental impact statement
Ellender, Allen J., 189, 258–260, 262, 266, 268
Ellet, Charles, Jr., 43–44
EMSL. *See* Environmental Monitoring Systems Laboratory
Endangered species, 6–7
Engineer Commission, 59
Engineering for Dams, 239
Engineering News-Record, 139
Environmental Advisory Board, 278

- Environmental Base and Management Study—Atchafalaya Basin, Louisiana*, 295
- Environmental Defense Fund, 275
- Environmental impact statement, 263, 273, 276–280, 282–289, 293, 313, 319, 321, 330–332
- Environmental issues, 273–289, 312–321
- Environmental Monitoring Systems Laboratory, 294–295
- Environmental Protection Agency (U.S.) approach to Atchafalaya Basin protection, 294–299 development of management units, 296–297 formation of, 269 Office of Research and Development, 294 steering committee for DEIS, 282–285 support of Avoca Island Levee extension, 318 water management study, 270 wetlands restoration, 315
- Environmentalists, 263, 272, 323, 327
- EPA. *See* Environmental Protection Agency
- Erosion, 63
- Eudora Floodway cancellation of construction plan, 195–197 compromise between Whittington and Overton, 194 MRC report of 1941, 195 opposition to, 182, 185–186 options and rights acquisition linked to Morganza Floodway, 185–186 problems obtaining options and rights, 189–190 proposal to substitute for Boeuf Floodway, 178–179
- Evangeline Oak, 107
- Evens, John, 76–77
- Executive Order No. 79, 267
- Expressway. *See* Swamp Expressway
- Fact sheets, 334
- Farmlands, 6
- Feasibility reports, 319, 321, 330, 331, 350
- Federal agencies. *See specific agency by name*
- Federal policy easements. *See* flowage easements first federal flood control plan, 36–40 flowage easement purchases, 167–171 increased involvement in levee system control, 62–67 land acquisition, FWS proposal, 299–311 legislation. *See specific legislation by name* levee policy. *See* levees levee rights-of-way, 157–167 local contribution policy, 119–120, 158
- Fee simple options, 188–192, 194, 195, 325
- Ferguson, Harley B., 138, 147–153, 157, 176, 178, 189, 191–194
- Feringa, Peter, 216–219, 229
- Ferry service, 24
- Fieser, James, 110
- Fish Commission (U.S.), 294
- Fish and Wildlife Coordination Act, 254, 261, 339
- Fish and Wildlife Service (U.S.) administration of Atchafalaya National Wildlife Refuge, 344 criticism of DEIS, 285 dewatering issue, 297–298 land acquisition proposal, 299–311 recommendation for land purchase, 251 relationship with Corps of Engineers, 254–264 support of Avoca Island Levee extension, 318
- Fish crop, Atchafalaya Basin, 6
- “Fishbowl planning,” 282, 340
- Fisheries and wildlife conservation, 250–251, 253–264
- Fishing industry, 12, 251, 255. *See also* Fisheries and wildlife conservation
- Fisk, Harold N., 213–214, 218, 238
- Fixed weirs, 145–146
- Flachbarth, Charles, 349

- Flatboats, 23
Flint, Timothy, 26
Flood control. *See also* Jadwin Plan and Levees
Atchafalaya Basin Protective Association plan, 123–124
compensation for flowage rights, 126–129, 132
comprehensive plan, 101
first federal plan, 36–40
Jadwin Plan, 110–121
Mississippi River floods, 32
Mississippi River project of 1928, 174
MRC proposal, 109–120
outlet debate, 93–101
Roosevelt's opinions on, 177
Flood Control Act of 1917, 94–95, 174
Flood Control Act of 1928, 11, 112, 121, 127–133, 140, 148, 158, 162–163, 174, 231, 233, 283, 332, 335, 337, 356
Flood Control Act of 1936, 187
Flood Control Act of 1938, 194
Flood Control Act of 1941, 197, 211, 217
Flood Control Act of 1950, 217, 235
Flood Control Act of 1954, 235
Flood Control Act of 1958, 240–241
“Flood Control Bulletin,” 146
Flood Control Committee. *See* House Flood Control Committee; Louisiana Flood Control Committee
Floodgates, 207
Floods
of 1912, 93
of 1927, 101, 103–110
crevasse formation, 66, 84, 103–105, 161, 163
Old River's current reversal, 212
Red River flood of 1932, 162
super flood, 111–112, 142
Floodways. *See also* Flowage easements
Atchafalaya Floodway, 111–112, 132
Birds Point–New Madrid Floodway, 127, 190
Board of State Engineers concerns, 124
Boeuf Floodway, 126, 130–132, 144, 146, 169, 171, 173, 178–179
damages resulting from use of, 118
easements, 167–171, 198
economic justification of, 175–176
highway and railroad crossings, 184, 200
Land Office Commissioner's recommendation, 39
map of system, 2
Morganza plan, 101
MRC flood control plan, 110–111, 113
parts of system, 5
state's plan, 143
supporters of, 173
weakness of, 13
Flowage easements, 353
compensation issues, 167–171
effect of, 199
feasibility report, 330
Jadwin Plan, 126–129, 132, 158
for Morganza Floodway, 194, 198
opposition to, 178
options for fee simple, 188–192
Overton plan, 182
proposals by EPA and FWS, 325–326
for West Atchafalaya Floodway, 198
Ford, Charles R., 289
Ford, Gerald, 286
Forest Service (U.S.), 118, 169–170
Forked Deer (Tennessee), 273
Forshey, Caleb, 44, 59–60
Frazier, Lynn, 118
Freeboard, 196
Freedmen, 57
Freeman, John R., 97–98, 108–109, 228
French Acadians. *See* Acadians
Freshwater canals, 251–252
Friction control, 226
Fryling, Charles, 295–296, 329
Fur industry, 8
Fuse plug levees, 5, 111–112, 114, 123, 125–126, 145–146, 190, 212
FWS. *See* Fish and Wildlife Service
Garrison Diversion Unit Commission (U.S.), 340
Gated weirs, 224

- Gauging stations, 62
 Gautreaux, Benny J., 259
GDM. See General design memorandum
 General design memorandum, 256–258, 281, 287–289, 299
 General Land Office (U.S.), 37–38
 General Survey Act, 10
A Geographical Description of the State of Louisiana, 17
 Geological studies, 213–214
 Gianelli, William R., 333–335, 337, 343–344
Gibbons v. Ogden, 10
 Gillespie, George L., 86
 Gillham Dam (Arkansas), 273–274
 Girder spans, 200
 Glasgow, Leslie, 266, 267, 268–269
 Good, James W., 129–130
 Governor's Commission on the Atchafalaya Basin (Louisiana), 267–268, 270, 271–272, 276
 Graham, George, 37–40
 Graham, Jackson, 257–258
 Grand Lake, 154–156, 236, 352
 Grand Lake Coal Company, 77
 Grand River, 124–125
 Gratiot, Charles, 28
 Graves, Ernest, 219
 Graves, Ernest, Jr., 286–288
 Graves, Eugene A., 219, 224, 226
 "Great holes," 87–88
 Greater Atchafalaya Basin Council, 253, 259, 260, 262, 264, 270, 271, 282
 Greenbelts, 326–328
 Greenwalt, Lynn, 302–305, 308–310
 Guide levees, 3, 180, 199, 207
 Guide wall failure, 243–244
 Gulf of Mexico, 8
Handbook of Hydraulics, 239
 Hardin, John R., 230–235, 238–239
 Hardwoods, 325–326
 Harrison, Pat, 173
 Harrison, Robert, 41
 Harrod, B. M., 73, 75, 86
 Harvey Lock, 236–237
 Harza Engineering Company, 238
 Hatch, Henry J., 345
 Haw, Elizabeth, 337
 Hawes, Suzanne, 314
 Hayes, Rutherford B., 64
 Hearn, Chauncy W., 219
 Hébert, Louis, 33, 36
 Hebert, Murray, 319, 337
 Hébert, Paul O., 30, 32, 34, 35, 62
 Heberg, E.R., III, 285–286, 330, 337–338, 343
 Herbst, Robert, 303, 309
 Herschel, Clemens, 85
 Highways
 crossings over floodways, 184, 200
 relocations, 199
 Hinds, Julian, 238, 239
 Hodges, John N., 146
 Hodges, Henry, 60
 Hofe, G. Douglas, Jr., 268
 Holcombe, W. H., 128, 143, 159, 161
 Holle, Charles G., 236
 Hoover, Herbert, 110, 129, 130, 133, 137–139, 146
 Houck, Oliver, 275–279, 283, 285, 304–305, 323–325, 327–329, 331
 House Committee on Lands and Levees, 86
 House Committee on Public Works, 270
 House Concurrent Resolution No. 67, 264
 House Concurrent Resolution No. 612, 264
 House Document 288 of the 67th Congress, 236
 House Flood Control Committee, 96, 109, 115–117, 119–120, 139, 140, 148, 173, 197
 Howard, Charles T., 58
 Howell, Charles W., 90
 Hudson, Fred, Jr., 183
 Hudson, George H., 219
 Humphrey, Enoch, 26
 Humphreys, Benjamin C., 93
 Humphreys, Andrew A., 43, 50–52, 57, 63
 Humphreys–Abbot report, 49–52, 63
 Hunting issues, 250–251, 326, 328
 Hurley, Patrick J., 138–139, 144
 Hutchins, Thomas, 17
 Hydraulic dredges, 83, 86. *See also Dredge boats*
 Hydraulic overstress, 242–243

- Hydraulic theory, 87
Hydrographical survey, 43
Hydrographs, 296–299
Hydrologic management units, 295–297
- Iberia Parish, 67
Iberia-St. Martin Parish Flood Control Organization, 167
Indian Bayou, 153
Indigo, 22
Inland Waterway Fund, 94
Intake control structure, Morganza Floodway, 200, 201–202
Interregnum period, 49–69
Interstate compact, 174
Intracoastal Waterway, 90, 318
Isacks, Jacob C., 40
Itschner, Emerson C., 234
- Jackson, Thomas H., 122, 124, 128, 145
Jacksonville District (U.S. Army Corps of Engineers), 274
Jacobs, Harry, 126, 140, 143, 146, 159, 161
Jadwin, Edgar, 90, 109–118, 137, 141
Jadwin Plan
acceptance of, 119–121
compared with MRC's plan, 111
compared with state's plan, 143
costs, 111, 118, 143
criticism of, 126–127
importance of, 202–203
legal opinion of, 129
objections to, 113–117, 174
presentation of, 110–111
provision for rights-of-way and flowage rights, 158
public hearings, 123
review of engineering features, 176
revision of, 139–147, 177–181, 203
special board, 121–127
super flood protection, 111–112, 142
unwinding of, 127–134
- James, R. D., 336
Jeffersonian Democracy era, 9
Jenkins, Thomas A., 187
Jennings, Edward B., 250, 253, 257
Jones, Wesley, 118, 119
Jones bill, 120, 122
- Jones-Reid bill, 120, 167
Joseph, James A., 309
Judge Advocate General (U.S.), 166
Just compensation, 181, 182–183
- Karz, Ronald, 267
Kazmann, Raphael, 243
Kelly, William, 141
Kem, Richard, 336–337
Kemper, James P., 106–108, 111, 113, 123, 125
Kennan, Robert, 279
Kennedy, John F., 254
Kerlin, Cary, 303–304
Kerr, Frank M., 88
Kidder, John, 132
Kimball, Thomas, 277–280
Kimbel, Joseph W., 233
Kincaid, R. Foster, 130–133, 163
Kindred Dam (North Dakota), 273
Kingman, Dan C., 81, 84, 92
Kloster, John, 97–98, 107, 140
Koisch, Francis, 286–288
Kolb, Charles R., 218, 219
Kramer, Hans, 215
Kristoferson, Ralph, 259
- La Farge Dam (Wisconsin), 273
Lafayette Chamber of Commerce, 310, 341
Lafayette Daily Advertiser, 307–308
Lafourche and Terrebonne Navigation Company, 25
Lambou, Victor, 253, 269, 298–299
Lamm, Richard, 340
Land acquisition, FWS proposal, 299–311
Land and Royalty Owners of Louisiana Association, 267, 282
Land and water quality study, 272
Land Office. *See* General Land Office
Landowner issues, 267–272, 282–289, 298, 301–311, 323–331, 346
Larcade, Henry D., Jr., 216, 235
LAROLA. *See* Land and Royalty Owners of Louisiana Association
Lateral canals, 7
Latimer, Rodney A., 218, 219, 224, 225, 227, 231
Le Conte, L. J. E., 88

- Leach, Smith S., 84
 League of Women Voters, 307
 Lee, Robert C., 331, 339, 340
 Levees
 authorization to repair and build, 66
 breaks during floods of 1927, 103–104
 committee on, 42
 congressional policy after Civil War, 57
 construction from 1881 to 1927, 160
 cost-sharing, 94, 118
 crevasses, 36
 districts, 60–61, 64, 65, 87, 88, 159, 162
 effect on backwater areas, 211
 flood control plan, 110–111
 freeboard, 101
 functions of, 46
 fuse plug levees, 5, 111–112, 114, 123, 125–126, 145–146, 190, 212
 guide levees, 180, 199, 207
 impact of, 11–12
 increased federal government involvement, 62–67
 Land Office Commissioner's recommendation, 39
 landowner requirements, 19–20
 levee hierarchy, 105
 levees-only policy, 50–52, 101
 limitations of, 47
 local contribution policy, 119–120, 158
 manmade, 3, 5, 6
 MRC report of 1941, 196
 neglect during Civil War, 54–55
 outlet debate, 85–86, 99
 protection levees, 207
 on public land, 37
 reconstruction after Civil War, 56, 58
 relief levees, 112–113
 rights-of-way, 113, 118–119, 128, 157–167
 ring levees, 111, 113, 125, 261, 318, 319–321
 state management system, 58–62
 state responsibilities, 46
 tax assessment, 61, 64
 Lewis, Henry Fielding, 327
 Lincoln, Abraham, 47
 Lincoln, Robert T., 66
 Lindner, Clement P., 214
 Lippold, Herbert, 336
 Livingston, Edward, 40
 LMVD. *See Lower Mississippi Valley Division*
 Local contribution policy, 119–120, 158
 Locks
 barge travel, 236–237
 cost of, 100
 Harvey Lock, 236–237
 navigation lock for Old River, 241
 plan for Old River, 216
 Plaquemine Lock, 89–90, 237
 Port Allen Lock, 233, 237
 Lockwood, C. C., 335
 Logan Dam (Ohio), 273
 Long, George S., 235
 Long, Huey P., 141, 164–165, 173
 Long, Stephen H., 43
 Long, Russell, 235, 255, 257
 Louisiana. *See also* separate agencies
 aid for clearing the river rafts, 30, 32–33
 concern of state legislation over Atchafalaya project, 255
 control of water resources, 9
 Department of Culture, Recreation and Tourism, 324
 Department of Natural Resources, 324
 Department of Public Health, 233
 Department of Public Works, 61, 270, 272, 282, 284, 288
 Department of Transportation and Development, 317
 Department of Wildlife and Fisheries, 317, 318, 324
 land reclamation, 41
 request for federal assistance, 10
 State Department of Agriculture and Immigration, 167
 system of levee management, 58–62
 weaknesses of levee system management, 65
 Governor's Commission on the Atchafalaya Basin, 267–268, 270, 271–272, 276
 Louisiana AFL-CIO, 271, 307

- Louisiana and Texas Intracoastal Waterway, 90
- Louisiana and Texas Railroad and Steamship Company, 68
- Louisiana Bass Clubs, 307
- Louisiana Board of State Engineers. *See* Board of State Engineers
- Louisiana Flood Control Committee, 141
- Louisiana Geological Survey, 213
- Louisiana Goals Commission, 264
- Louisiana Highway Commission, 199–200
- Louisiana Land Use Proposal, 326
- Louisiana Landowners Association, 286, 327
- Louisiana Levee Company, 58–60
- Louisiana NAACP, 271, 307
- Louisiana Outdoor Writers Association, 267
- Louisiana Purchase, 22
- Louisiana Railway and Navigation Company, 91–92
- Louisiana Reclamation Club, 98
- Louisiana State University, 270
- Louisiana Stream Control Commission, 270
- Louisiana Wild Life and Fisheries Commission, 253, 255, 260, 263, 264, 282
- Louisiana Wildlife Biologists Association, 307
- Louisiana Wildlife Federation, 251, 267, 307, 329
- Low sill structure, 229–230, 239–247
- Lower Floodway, 5, 6
- Lower Granite Dam (Washington, Oregon, and Idaho), 273
- Lower Mississippi Valley Division (U.S. Army Corps of Engineers)
- Avoca Island Levee issue, 335
 - Ferguson as engineer, 138, 148
 - general design memorandum, 256
 - Hardin as engineer, 232
 - Jackson as head, 145
 - Koisch as engineer, 286–287
 - model testing, 263
 - Noble as engineer, 280
 - recommendation for swampland, 153
 - Sands as engineer, 300, 346
- sediment diversion issue, 224
- Lumber industry, 8, 12, 67–68
- Mail steamers, 67
- Management units, 295–297, 314–316, 336
- Manufacturers Record*, 133
- Mapping technology, 213
- Markham, Edward M., 176–179, 183–185, 189–192
- Markham Plan, 176–181
- Marshland, 6
- Martin, Wade O., Jr., 143, 147, 267, 269, 271
- Martin, Whitmell P., 113–115, 118, 122
- Masonry weirs, 145–146
- Matthes, Gerard H., 154, 156, 213
- Maxwell, George H., 98–99, 104–106
- Mayo, William, 30, 34
- McBroom, James T., 260
- McCarl, J. R., 166
- McClellan, John, 175, 182, 187
- McCool, Daniel, 254
- McHarg, Ian L., 295
- McKeithen, John, 265, 267, 269, 270, 276
- McLaughlin, Ann D., 340
- McNary, Charles L., 186
- McPhee, John, 245
- Mean sea level, 224
- Melville, Louisiana, 93
- Metropolitan Water Roundtable, 340
- Mid-Continent Oil and Gas Association, 308
- Midboe, Kai, 323, 327–328
- The Military Engineer*, 232–233
- Miller, F. William, 327
- Miller, John E., 186–187, 193
- Millis, John, 85
- Mineral rights, 268, 325–326, 328
- Mississippi River
- authorization of funds for improvement of, 57
 - branches of, 211
 - clearing of, 10, 28–31
 - diversion of waters into the Atchafalaya, 215
 - diversion prevention, 218–219
 - first federal flood control plan, 36–40

- flood control, 32
 flow of, 8–9
 gauging stations, 62
 outlets of, 51
 water flow into Old River, 210
- Mississippi River and Tributaries Project, 338
 impact of, 356
 review of, 255, 258
 schematic map, 208
- Mississippi River Commission (U.S.)
 Avoca Island Levee issue, 335–336
 closure of Cypress Creek Gap, 97
 conference on Old River options, 224–227
 criticism of, 104–105
 establishment of, 356
 Ferguson as president, 148, 149
 Feringa as president, 217
 final report on outlets, 99–100
 flood control proposal, 109–111, 113, 115, 117–120
 formation of, 62–67, 69
 geological studies of Mississippi River, 214
 Hardin as president, 232
 Jackson as president, 122
 Koisch as president, 286
 outlet debate, 71, 73–89
 plan for lock and control structure on Old River, 215
 Plaquemine Lock development, 89–90
 recommendation to close Old River, 212
 report on Eudora Floodway, 195
 Sands as president, 300, 346
 schematic map of Mississippi River and Tributaries Project, 208
 study of Old River closure, 91, 95
 topographic maps of Mississippi area, 213
 Tyler as president, 212
- Mississippi Valley Flood Control Association, 130
- Misso, Robert, 299–305
- Missouri Pacific Railroad, 199
- Missouri River, 10
- Mitchell, William D., 129
- Mitchim, Charles F., 232
- Model testing, 201, 228, 239, 263–264, 350
- Moore, Norman R., 232
- Moore, W. Henson, 308
- Morgan, Charles, 52, 68
- Morgan City, 179, 336
- Morgan City–Port Allen route, 237
- Morganza Crevasse, 85
- Morganza Floodway, 5
 acquisition of options and rights linked to Eudora Floodway, 185–186
 advantages of, 180–181
 construction of, 198–203
 flowage easements obtained, 198
 intake structure, 200, 201–202
 map of, 199
 Overton's amendment, 192–194
 percentage of options obtained compared to Eudora Floodway, 189–190
 proposal to construct, 179
- Morganza plan, 101
- Morris, John A., 58
- Morris, John W., 284, 287
- Morse, George, 35, 36
- Morton, Rogers C. B., 268
- MRC. *See* Mississippi River Commission
- MR&T. *See* Mississippi River and Tributaries Project
- msl. *See* Mean sea level
- Multipurpose hydrographs, 298
- National Association for the Advancement of Colored People (NAACP), 271, 307
- National Environmental Policy Act, 263, 273, 277, 278, 279, 281
- National Flood Prevention and River Regulation Commission, 107
- National Forest, 231
- National Forest Reservation Commission, 168–170
- National Industrial Recovery Act, 169–170
- National Marine Fisheries Service, 270, 318

- National Oceanic and Atmospheric Administration (U.S.), 254, 318
National Park Service (U.S.), 251, 266
National parks, 231, 251
National Reclamation Association, 98, 107
National recreation area, 267–268, 269
National “Safetyvalve,” 99
National Wildlife Federation, 256, 270
agreement with Corps of Engineers, 275–282, 357
writing the environmental impact statement, 282–289
National wildlife refuges, 308
Natural resources, 8, 291–292
Navigation channels, 235–236, 251–252
Navigation lock, Old River, 216, 241
Needle weirs, 224
Neely, Bill, 329
NEPA. *See* National Environmental Policy Act
New Deal programs, 168, 173
New Iberia, Louisiana, 106
New Orleans, flooding concerns, 97–98, 100–101
New Orleans, Opelousas and Great Western Railroad, 52
New Orleans, Texas and Mexico Railroad, 199, 200
New Orleans District (U.S. Army Corps of Engineers), 256, 259, 262, 263, 276, 278, 284, 285, 288, 301, 325, 330, 336
New Orleans Times-Picayune, 76, 307–308
Newlands, Francis G., 93–94
Newlands bill, 106
NIRA. *See* National Industrial Recovery Act
Nixon, Richard M., 263, 273, 274
Noble, Charles C., 244, 247, 280
Northeast Louisiana Protective Association, 185
NWF. *See* National Wildlife Federation

OCE. *See* Office of the Chief of Engineers
Ockerson, John A., 87–88, 99
Odom, Leo, 210
Odum, Howard T., 295
Office of Environmental Review, 295
Office of Public Works, 303, 317–318, 324
Office of the Chief of Engineers (U.S.), 287, 301. *See also* Chief of Engineers
Ohio River, 10
Oil and gas industry, 8, 255, 267–268, 310
Old River, 33. *See also* Old River Control Structure
backwater flooding, 214
closure study, 91, 95
conditions at end of Civil War, 73
conferences to study options for, 220–230
current reversal, 212
dredging, 210
Eads’ plan, 75
junction with Atchafalaya, 72
Kramer’s report, 215
map of, 31
map of control plan, 231
Mississippi River water flow, 210
MRC’s plan, 80
proposed spillway construction, 142
recommendations for closing, 211–212, 214
Stickney’s plan, 78–79
upper and lower, 28
Old River Control Structure, 12
auxiliary structure, 245–247
building of, 238–242
controversy over, 222
criteria for, 226
delayed by St. Lawrence Seaway authorization, 234–235
guide wall failure, 243–244
options for, 221–222
plan for, 215–217
plans to operate, 312
post-construction problems, 242–247
proposed site, 229
Old River Dam, 82, 86
Oliver, Lunsford E., 193
Optimum aquatic hydrographs, 298
Our National Defense-The Patriotism of Peace, 98
Outlet Convention, 86

- Outlets**
 debate over closing outlets, 71
 flood control and, 93–101
 Mississippi River Commission plan, 73–89
 navigation interests, 89–93
 opposition to, 51
 at Point a la Hache, 100–101
 recommendations for, 39, 42, 43
Overbank structure, 230, 240–241, 247
Overton, John H., 162, 164–166, 173–176, 181–186, 189, 192–197, 356
Overton Act, 171, 181–188, 330
Overton–Dear Act, 167
Page, Robert, 347–348
Parker, Walter, 107
Passman, Otto, 216, 235, 258
Permeable dikes, 66. *See also* “Doctrine of Contraction”
Pescadero Creek (California), 273
Peters, Lewis C., 297
Petits habitants, 22
Petroleum industry, 236, 253, 308
Pick, Lewis A., 217
Pinchot, Gifford, 118
Pipeline dredges, 150, 152
Pitot, James, 26
Plan and Concepts for Multi-Use Management of the Atchafalaya Basin, 296
Planimetric maps, 213
Plaquemine Lock, 89–90, 237
Point a la Hache, Louisiana, 100–101, 103
Point Coupee Parish, 91
Polk, James K., 47
Port Allen Lock, 233, 237
Potter, Charles L., 97, 122
Preliminary DEIS, 284–285
Private property. *See* Flowage easements; Rights-of-way
Progressive era, 10
Project flood, 208
Protection levees, 3, 207
Public access, 255, 264, 304, 326–327, 336, 346–347, 353
Public acquisition issue, 306–311, 324
Public good. *See* Flowage easements; Rights-of-way
Public Law 98-548, 344
Public ownership, 323
Pyburn, DeWitt, 215
Rafts. *See* River rafts
Railroads, 52, 68, 91–92
 crossings over floodways, 184, 200
 relocations, 199
Ransdell, Joseph E., 93, 95, 96, 114–115, 128–129, 133, 182
Ransdell–Wilson bill, 96
Read, William, 336, 342–343
Reagan, Ronald, 329, 333, 335, 341–342, 345–346, 347
Real estate design memorandum, 346–349
“Realistic Plan,” 327
Reclamation, 41
Reconstruction Congress, 57
Recreation issues, 251, 264–266
Red Cross, 103, 110
Red River
 Atchafalaya and, 52, 79–80, 209
 backwater areas, 211
 changing the flow of, 28, 33
 conditions at end of Civil War, 73
 flood control appropriations, 95–96
 flood of 1932, 162
 flow of, 8
 levee safety concerns, 80–81
 raft, 26
 rights-of-way dispute, 158–161
Red River, Atchafalaya, and Bayou Boeuf Levee District (Louisiana), 158, 162, 164–166
Red River Dam, 82
REDM. *See* Real estate design memorandum
Reed, Nathaniel, 268
Reforestation, 108
Refuge Revenue Sharing Act of 1935, 308–309
Reid, Frank, 117, 119, 139–140, 144
Relief act of 1933, 168
Relief levees, 112–113
Report upon the Physics and Hydraulics of the Mississippi River, 50
Republican Party, emergence of, 10, 49

- Reservoir Board, 141–142
Reservoirs, 43, 111
Atchafalaya Reservoir, 107–108
Reservoir Board, 141–142
state's plan, 143–146
on the White and Arkansas Rivers, 186–187
Retaining dikes, 260–262
Revetments, 66, 81, 108, 111
Rice crops, 55–56, 156
Richardson, Henry B., 86, 88
Ricker, Samuel, 42
Ridges, 9
Rights-of-way, 113, 118–119, 128, 157–167, 184
Ring levees, 111, 113, 125, 261, 318, 319–321
River basin swamp, 6
River rafts
in Atchafalaya River, 209
clearing, 26–36
River transportation, 23–25
Rivers and Harbors Act of 1882, 76
Rivers and Harbors Act of 1888, 81
Rivers and Harbors Act of 1910, 68, 91, 93
Rivers and Harbors Act of 1917, 94
Rivers and Harbors Act of 1927, 117
Rivers and Harbors Act of 1946, 216, 235
Robinson, Joseph T., 133, 182
Robinson, Hugh, 336
Roderick, George H., 234
Roemer, Buddy, 348
Rollins, Andrew, Jr., 279
Roosevelt, Franklin D., 167–169, 173, 176–177, 186–187, 191, 194, 197
Rush, Early J., III, 288, 297, 299, 301, 323
Rush, Richard, 37
Safe River Committee of One-Hundred, 97, 106
Safetyvalve system, 99
Salem Church Dam (Virginia), 273
Saltwater intrusion, 263, 318
Sandbars, 73
Sanders, A. Foster, III, 306, 308, 329
Sands, Thomas, 300, 302–303, 310, 313, 318, 321, 323–326, 330–332, 336, 338, 346
Sargent, Howard L., 282
Save The Atchafalaya Basin (STAB), 306
Scenic easement, 268
Schley, Julian L., 175, 192–194, 196, 200, 213
Schneider, F. H., 185
Schoenberger, George C., 124–125
Schroeder, Robert, 298, 305, 341
Schweizer, Charles W., 218, 219
Scouring, 200, 214, 242–243, 301
Sears, Willis, 115–117
Secretary of War, 66, 144, 162
Sedimentation, 12. *See also* Siltation
bed-load formula, 220–227
caused by dredging, 156
channel construction to prevent problems, 249
diversion of, 223, 227–228
plan to solve problem, 312–313
Senate Commerce Committee, 91, 114
Senate Committee on Public Works, 236, 255
Senate Concurrent Resolution No. 53, 267
Senate Concurrent Resolution of the Louisiana Legislature, 257
Senate Finance Committee, 62
Senate Public Works Committee, 263, 270
Senate Select Committee on Flood Control, 62
Service Land Acquisition Review Committee, 302
Sessums, Roy T., 233, 235, 336
Sewerage and Water Board of New Orleans, 233, 263
Sharecropping, 55
Sherburne Wildlife Management Area, 347–349
Shreve, Henry M., 26–30, 209, 355
Sierra Club, 329, 349
Sill dams, 78–79, 81–83, 86
Siltation, 73, 154–156. *See also* Sedimentation
Simpson, Oramel H., 103, 164
Six Mile Lake, 154–155, 236, 352

- Skerrett, B. E. M., III, 253, 259–260, 266–270, 341
- Slichter, Francis B., 219, 222, 224, 225, 227–228
- SMIG. *See* St. Mary's Industrial Group
- Smith, Spencer, 260, 266
- Snagboats, 29–30, 32–34
- Soil borings, 177
- Soil mechanics research, 177
- Soileau, David, 297–298, 304, 319, 337
- South Louisiana Landowners Association, 288
- Southern Pacific railroad, 114
- Southern Steamship Company, 52, 68
- Spear, Michael, 334
- Special Board, 121–127
- Special Flood Control Board (U.S. Army Corps of Engineers), 130
- Spillway Board, 101, 111
- Spillways, 101, 105, 108
- Bonnet Carré Spillway, 127
 - Klorer's plan, 97–98
 - MRC flood control plan, 110–111
 - proposed construction above Old River, 142
- Spoil disposal, 251, 260–262
- Sponenbarger, Julia C., 171
- Sports Fisheries and Wildlife Bureau, 254
- St. Lawrence Seaway, 166–167, 234–235
- St. Martinville, 107
- St. Mary's Industrial Group, 307, 336
- STAB (Save the Atchafalaya Basin), 306
- Stanton, Edwin, 57
- State Agency Work Group (Louisiana), 324, 326
- State Board of Engineers (Louisiana). *See* Board of State Engineers
- State Chamber of Commerce (Louisiana), 271
- State Department of Agriculture and Immigration (Louisiana), 167
- State Parks and Recreation Commission, (Louisiana) 263
- Steamships, 23–25, 52–53, 67–68, 77
- Steering committee for EIS, 282–285, 288–289
- Stickney, Amos, 77–78, 81, 86
- Stoddard, Amos, 17, 29, 209
- Straub, Lorenz G., 220–224, 226–229, 238, 240
- Stream Control Commission, 270
- Stuart, Robert Y., 169–170
- Sturdevant, Carlton W., 122
- Sturgis, Samuel D., Jr., 230–231, 234
- Subbasins, drainage and levee plans, 96–97
- Subsistence farmers, 22
- Sugar cane, 22–23, 55
- Summers, Max, 253
- Super flood, 111–112, 142
- Supplemental Appropriations Act of 1985, 344
- Surveys
- aerial, 178, 213
 - hydrographical, 43
 - for levees and public works, 58
 - of lower Mississippi basin, 43
 - for roads and canals, 10
 - topographical, 43, 213
 - of transportation routes, 63
- Suter, 84
- Suter, Charles R., 63, 73, 75
- Swamp dwellers, 22
- Swamp Expressway, 3, 4, 5
- Swamp Land Commissioners, 45–46
- Swamp Land Funds, 45
- Swampers, 67, 74
- Swampland Acts, 40–47
- Swampland sales, 44
- Swamps, 6
- Tabberer, Daniel, 297–298
- Tainter gates, 245
- Task Force on Parks, Recreation and Tourism (Louisiana), 264–265
- Tax assessment, for levees, 61, 64
- Taylor, Robert, 91
- Tennessee-Tombigbee Waterway (Alabama and Mississippi), 273
- Tennessee Valley Authority, 174
- Tensas-Cocodrie area, 231
- Tentatively selected plan, 319, 327–328
- Terrebonne Parish, 319, 337
- Texas and Pacific Railroad Company, 91, 184, 199
- Thompson, M. Jeff, 59–60
- Thompson, Sandra, 271
- Thompson, T. Ashton, 235

- Three-dimensional modeling, 228
Timber Act of 1876, 67
Timber industry, 8, 12, 77, 156,
267–268, 297–298, 348
Title in fee simple, 188–192, 194, 195,
325
Toffaleti, Fred B., 220–221, 225–226
“Topographical Corps,” 39
Topographical surveys, 43, 213
Tourism industry, 264–265
Townsend, Curtis McDonald, 85
Treen, David C., 323–324, 326–330,
334–335, 340–341
Trestles, 200–201
Trowbridge, Newman, 288, 305, 323,
324–325, 327–329
TSP. *See* Tentatively selected plan
Tulsa District (U.S. Army Corps of
Engineers), 274
Turnbull, Willard J., 218
Turnbull Bend, 28, 209, 355
Tyler, Max C., 195, 197, 201,
212–213, 230
Udall, Stewart L., 253, 265
U.S.–Canadian treaty, 166
User fee policies, 346
van Beek, Johannes, 296
Vandenberg, Arthur, 166
Vanderbilt, Cornelius, 52
Veysey, Victor, 286–287, 289
Viellon, Edgar, 329
Vogel, Herbert, 234
Voisin, Mike, 337
Wallace, Henry A., 168, 189
War Production Board, 200–201
Water and Land Resources Study,
294–295
Water management study, 269, 270
Water quality issues, 81, 233, 269, 272,
295
Water resources, beginning of
government involvement, 4–5
Water Resources Development Act of
1986 (WRDA), 346, 348, 349
Waterfowl, associated with Atchafalaya
Basin, 6
Waterway Commission, 105
Waterways Experiment Station (U.S.
Army Corps of Engineers), 151,
176, 201, 213, 215, 228, 230,
239, 245, 263
Watt, James, 329, 333
Wax Lake Outlet, 179, 194–195, 207,
352
Weirs, 145–146, 224, 352
Wells, James M., 56
WES. *See* Waterways Experiment
Station
West, Charles H., 145
West Atchafalaya Basin Protection
Levee, 3, 6, 156
West Atchafalaya Floodway, 5, 207
flowage easements obtained, 198
highway crossings, 200–201
map of, 199
percentage of options obtained
compared to Eudora Floodway,
189
railroad crossing, 184
Wetlands
annual losses, 293
restoration, 315
Whiskey Bay Channel, 3, 4, 153
White River, 186–187
Whittington, William M., 143,
173–175, 182, 185–187, 191–194,
196–197, 356
Wilbert, L. J., 218
Wild Life Preserve, 231
Wilderness area, 251
Wildlife and Fisheries Commission
(Louisiana), 270, 306
Wildlife conservation. *See* Fisheries and
wildlife conservation
Williams, E. J., Jr., 222, 224, 225, 226
Williams, Henry T., 34, 35
Williams, L. Kemper, 123–124
Williamson, Lamar, 183
Willow mattress revetments, 66, 81,

- Woodring, Harry H., 189
Wooldridge, Absalom D., 32, 42
World War II, effect on construction of
 Morganza Floodway, 200
WRDA-86. See Water Resources
 Development Act of 1986
- Yazoo Basin, 185-186, 197
Yazoo-Mississippi Delta Levee District
 (Mississippi), 88
Young, L. D., 253, 257-258, 265
"Z" factor, 221



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